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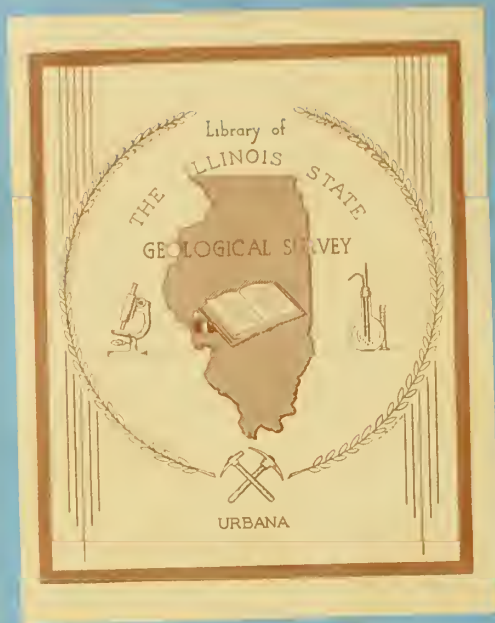


ILLINOIS MINERALS NOTE 58

ILLINOIS MINERAL INDUSTRY IN 1972

and Review of Preliminary
Mineral Production Data for 1973

Ramesh Malhotra



ILLINOIS STATE GEOLOGICAL SURVEY



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ILLINOIS MINERAL INDUSTRY IN 1972

and

Review of Preliminary Mineral Production Data for 1973

Ramesh Malhotra

ILLINOIS MINERAL INDUSTRY IN 1972

The mineral industry of Illinois comprises three types of operations: (a) mining and extraction of mineral materials, including fuels, found within the state boundaries; (b) processing of foreign crude mineral materials, primarily mined in other states, into basic raw materials for use in industry; and (c) manufacturing of finished mineral products, such as clay products, coke, cement, and lime, from mineral materials that are mostly mined and processed in Illinois. The minerals mined, materials processed, and mineral products manufactured in Illinois from 1970 through 1972, including their value, are listed in table 1.

According to the U.S. Bureau of Mines, Illinois in 1972 ranked tenth among the states in value of mineral production. Illinois mineral production and its percentage of the total national output, by mineral commodity, in 1972 are shown in table 2.

Mineral Materials Mined

The value of mineral commodities *mined* in Illinois during 1972 totaled 701.2 million dollars—approximately 11 and 10 percent more than 1970 and 1971 value levels, respectively. Of this amount 75 percent came from mineral fuel production (coal, crude oil, natural gas, and natural gas liquids), 24 percent from industrial and construction materials (clays, fluorspar, sand and gravel, stone, and tripoli) and the remaining 1 percent from metals (lead, zinc, and silver) and other minor minerals (peat and gemstones).

TABLE 1—PRODUCTION AND VALUE OF MINERAL MATERIALS MINED AND/OR PROCESSED
AND MINERAL PRODUCTS MANUFACTURED IN ILLINOIS, 1970-1972
(Value in thousands of dollars)

Commodity	Unit	1972			1971			1970		
		Quantity	Value	Average unit value	Quantity	Value	Average unit value	Quantity	Value	Average unit value
MINERAL MATERIALS MINED										
Fuels										
Coal	thousand tons	65,521	\$402,301	\$ 6.14	58,415	\$318,947	\$ 5.46	64,884	\$319,230	\$ 4.92
Crude oil	thousand bbl	34,874	121,013	3.47	39,084	135,621	3.47	43,747	142,178	3.25
Natural gas	thousand MMcf	1,194	334	0.28	498	139	0.28	198	28	0.14
Natural gas liquids*	thousand bbl	168	566	3.37	184	620	3.37	231	735	3.18
TOTAL			524,214			455,327			462,171	
Industrial & Construction										
Materials										
Clays										
Common clays	thousand tons	1,610	2,652	1.65	1,622	2,675	1.64	1,494	2,358	1.58
Refractory clays	thousand tons	106	662	6.24	90	513	5.72	182	1,503	8.26
Absorbent clays	thousand tons	W	W	W	W	W	W	W	W	W
Fluorspar	tons	132,405	9,961	75.23	138,051	9,883	71.59	148,208	8,637	58.28
Sand and Gravel										
Sand - construction	thousand tons	17,023	19,109	1.12	18,793	20,578	1.09	15,312	16,341	1.06
Sand - industrial	thousand tons	5,173	19,218	3.71	4,728	16,781	3.55	6,820	18,811	2.76
Gravel	thousand tons	17,734	23,367	1.32	23,466	29,581	1.26	21,793	25,001	1.15
Stone (limestone and dolomite)										
Crushed and broken	thousand tons	56,260	94,225	1.67	57,346	93,997	1.69	55,683	86,230	1.55
Dimension	thousand tons	W	W	W	4	60	15.00	13	126	9.69
Tripoli	thousand tons	W	W	W	W	W	W	W	W	W
TOTAL			169,194			174,068			159,007	
Metals										
Lead	tons	1,335	401	300.55	1,238	342	276.00	1,532	479	312.00
Zinc	tons	11,378	4,039	355.00	12,706	4,091	322.00	16,797	5,146	306.00
Silver	tons	W	W	W	W	W	W	—	—	—
TOTAL			4,440			4,433			5,625	
Others†										
Peat	thousand tons	74	W	W	72	W	W	63	711	11.23
Gem stones		—	W	—	—	W	—	—	W	—
Germanium		—	N.A.	—	—	N.A.	—	—	N.A.	—
TOTAL			W			W			711	
Values that cannot be disclosed (W)										
			3,393			3,020			2,010	
Total value of mineral materials mined†										
			701,242			636,848			629,526	

(Continued on next page)

TABLE 1 - Continued

Commodity	Unit	1972			1971			1970		
		Quantity	Value	Average unit value	Quantity	Value	Average unit value	Quantity	Value	Average unit value
MINERAL MATERIALS PROCESSED										
Natural gas liquids#	thousand bbl	8,610	\$ 17,908	\$ 2.08	8,154	\$ 16,960	\$ 2.08	8,754	\$ 15,932	\$ 1.82
Rare earths		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ground mica		—	W	—	—	W	—	—	W	—
Expanded perlite		—	W	—	—	W	—	—	W	—
Ground barite		—	W	—	—	W	—	—	W	—
Gypsum, calcined		—	W	—	—	W	—	—	W	—
Exfoliated vermiculite		—	W	—	—	W	—	—	W	—
Iron oxide pigments		—	W	—	—	W	—	—	W	—
Bismuth		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Secondary slab zinc		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Columbite		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Pig iron	thousand tons	7,197	542,883	75.43	6,500	448,882	69.06	7,388	470,616	63.70
TOTAL			560,791			465,842			486,548	
Values that cannot be disclosed (W)										
Total value of minerals materials processed†			21,157			16,124			15,411	
			581,948			481,966			501,959	
MINERAL PRODUCTS MANUFACTURED										
Cement shipments										
Portland	thousand tons	1,571	33,124	21.08	1,425	25,975	18.23	1,494	25,252	16.90
Masonry	tons	80	2,483	31.18	73	2,336	31.98	71	1,874	26.39
Clay products		—	69,248	—	—	59,759	—	—	53,935	—
Lime	tons	W	W	W	W	W	W	W	W	W
Sulfur***	tons	W	W	W	W	W	W	W	W	W
Coke	thousand tons	2,085	82,816	39.72	2,144	80,207	37.41	2,356	70,609	29.97
Glass		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
TOTAL			187,671			168,277			151,670	
Values that cannot be disclosed (W)										
Total value of mineral products manufactured			18,025			17,046			16,326	
			205,696			185,323			166,889	
STATE TOTAL†			\$1,488,886			\$1,304,137			\$1,299,481	

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, Illinois State Geological Survey.

* Produced in Illinois, according to the American Petroleum Institute.

† Commercial sales.

‡ Data may not add to totals shown because figures have been rounded.

Processed in Illinois.

*** Values and amounts of sulfur processed are included with total of mineral products manufactured to avoid disclosing individual company confidential data on lime.

W - Withheld to avoid disclosing individual company confidential data.

N.A. - Not available.

TABLE 2—MINERAL PRODUCTION AND VALUE FOR ILLINOIS COMPARED
WITH NATIONAL MINERAL STATISTICS, 1972

Commodity	Unit	Illinois		United States		Illinois percentage of United States production	
		Quantity	Value (in thousands)	Quantity	Value (in thousands)	Quantity	Value
Fluorspar shipments	thousand tons	132	\$ 9,961	250	\$ 19,900	52.88	50.06
Peat, commercial sales	thousand tons	74	W	607	7,112	12.19	W
Coal	thousand tons	65,521	402,301	595,386	4,560,657	11.00	8.82
Pig Iron	thousand tons	7,197	542,883	90,000*	6,527,700	8.00	8.32
Stone	thousand tons	56,260	94,225	923,800	1,700,000	6.09	5.54
Sand and gravel	thousand tons	39,930	61,694	936,000	1,200,000	4.26	5.14
Coke	thousand tons	2,085	82,816	60,507	2,032,456	3.45	4.07
Clays	thousand tons	1,716	3,314	59,817	303,405	2.87	1.09
Zinc	thousand tons	12	4,039	482	171,110	2.37	2.36
Cement shipments	thousand tons	1,651	35,607	88,000	1,630,000	1.88	2.18
Crude oil	thousand tons	34,874	121,013	3,455,368	11,706,510	1.01	1.03
Lead	thousand tons	1	401	618	185,770	0.21	0.22
Natural gas liquids produced	thousand bbl	168	566	755,941	N.A.	0.0222	N.A.
Natural gas	billion cu ft	1,194	334	22,532	4,185,869	0.0053	0.0079
Lime	thousand tons	W	W	20,290	339,304	W	W

Source: United States Bureau Mines, Illinois State Geological Survey, Illinois Department of Mines and Minerals, and American Petroleum Institute.

* Preliminary data

W - Withheld to avoid disclosing individual company confidential data.

N.A. - Not available.

Illinois led the nation in fluorspar and tripoli shipments, ranked second in the production of peat and stone, was third in sand and gravel production, and placed fourth in the production of coal. Of the 102 counties in the state, 99 reported extraction of mineral materials (tables 3 and 4). Perry County, which produced only coal and crude oil, accounted for about 10 percent of the value of minerals produced in Illinois. The production from this county was valued at 68.7 million dollars, the highest of any county in the state.

Mineral Materials Processed

Foreign raw mineral materials, primarily mined or extracted in other states, were processed in 14 counties (tables 3 and 4). The processed materials included pig iron, natural gas liquids, ground mica, expanded perlite, ground barite, calcined gypsum, exfoliated vermiculite, iron oxide pigments,

TABLE 3—VALUE OF MINERAL MATERIALS MINED AND/OR PROCESSED AND
MINERAL PRODUCTS MANUFACTURED IN ILLINOIS, BY COUNTY, 1972

County	Mineral materials mined, in order of value	Value (in thousands)	Mineral materials processed, in order of value	Value (in thousands)	Mineral products manufactured, in order of value	Value (in thousands)	Total value (in thousands)
Adams	Stone, sand and gravel, crude oil	\$ 2,928	Iron oxide pigments	W	Lime	W	\$ 3,875
Alexander	Tripoli, sand and gravel	1,288					1,288
Bond	Sand and gravel, crude oil, clay	W					W
Boone	Stone, sand and gravel	626					626
Brown	Sand and gravel, crude oil, clay	26			Clay products	W	W
Bureau	Sand and gravel	432					432
Calhoun	Stone	W					W
Carroll	Stone, sand and gravel	W					W
Cass	—	—					—
Champaign	Sand and gravel, stone	737					737
Christian	Coal, crude oil, stone	14,810					14,810
Clark	Crude oil, stone, sand and gravel	W					W
Clay	Crude oil, stone	W					W
Clinton	Crude oil, stone, sand and gravel	W					W
Coles	Stone, crude oil, sand and gravel, natural gas	2,353					2,353
Cook	Stone, sand and gravel, clay, peat*	27,234	Pig iron*, expanded perlite, exfoliated vermiculite, sulfur†, ground mica, sec- ondary slab zinc‡, bismuth‡	\$ 3,706	Coke*, lime, clay products, glass	\$ 24,258	55,198
Crawford	Crude oil, sand and gravel	6,407	Sulfur†	W	Clay products	W	15,413
Cumberland	Sand and gravel, stone	103					103
De Kalb	Stone, sand and gravel	W	Exfoliated vermiculite, ex- panded perlite	294			W
De Witt	Crude oil, sand and gravel	W					W
Douglas	Coal, stone, crude oil	W	Natural gas liquids	W			26,598
Du Page	Stone, sand and gravel	W	Rare earths‡	N.A.	Clay products, glass	W	W
Edgar	Crude oil	390					390
Edwards	Crude oil	1,898					1,898
Effingham	Crude oil	1,054					1,054
Fayette	Crude oil, stone, sand and gravel, clay	13,643			Clay products	W	13,643
Ford	Sand and gravel, stone	346					346
Franklin	Coal, crude oil	46,951					46,951
Fulton	Coal, sand and gravel	27,526					27,526
Gallatin	Coal, crude oil, sand and gravel	17,283					17,283
Greene	Stone	W			Clay products	W	W
Grundy	Sand and gravel, coal, clay	3,898			Clay products	W	3,898
Hamilton	Crude oil	4,028					4,028
Hancock	Stone	804					804
Hardin	Fluorspar, stone, zinc, lead, silver, germanium	15,927					15,927
Henderson	Stone, sand and gravel	521					521
Henry	Stone, sand and gravel	W					W
Iroquois	Sand and gravel, stone	72					72
Jackson	Coal, stone, sand and gravel	W					W
Jasper	Crude oil	2,332					3,332
Jefferson	Coal, crude oil	48,626					48,626
Jersey	Stone	190					190
Jo Daviess	Zinc, stone, lead, sand and gravel, silver	3,076					3,076
Johnson	Stone, coal	W					W
Kane	Sand and gravel, stone, crude oil, peat*	6,353	Iron oxide pigments	W	Clay products	W	12,518

(Continued on next page)

TABLE 3—Continued

County	Mineral materials mined, in order of value	Value (in thousands)	Mineral materials processed, in order of value	Value (in thousands)	Mineral products manufactured, in order of value	Value (in thousands)	Total value (in thousands)
Kankakee	Stone, sand and gravel, clay	2,732			Clay products	W	2,732
Kendall	Stone, sand and gravel	\$ 593					\$ 593
Knox	Coal, stone, clay	W			Clay products	W	15,594
Lake	Sand and gravel, stone, peat*	1,082	Calcined gypsum, expanded perlite	W	Clay products, glass	W	2,700
La Salle	Sand and gravel, stone, clay	W			Clay products, cement, glass	W	37,327
Lawrence	Crude oil, sand and gravel, stone	W					W
Lee	Stone, sand and gravel	2,620			Cement	W	W
Livingston	Stone, clay, sand and gravel	W			Clay products	W	4,522
Logan	Sand and gravel, stone	W			Glass	W	W
McDonough	Stone, crude oil, clay, sand and gravel	813			Clay products	W	W
McHenry	Sand and gravel, stone	W	Columbite†	N.A.			W
McLean	Sand and gravel	1,255					1,255
Macon	Sand and gravel, stone, crude oil	W			Glass	W	W
Macoupin	Coal, stone, crude oil	W	Exfoliated vermiculite	W			W
Madison	Stone, crude oil, sand and gravel	W	Pig iron*, sulfur†	W	Coke*, clay prod- ucts, glass	W	5,652
Marion	Crude oil, stone	W	Secondary slab zinc†	N.A.			W
Marshall	Sand and gravel	W					W
Mason	Sand and gravel	46					46
Massac	Stone, sand and gravel	W			Cement	W	13,470
Menard	Stone	W					W
Mercer	Coal stone	W					W
Monroe	Stone	525					525
Montgomery	Coal, stone, oil	W					W
Morgan	—	—					—
Moultrie	Sand and gravel, stone, crude oil	32					32
Ogle	Sand and gravel, stone	W					W
Peoria	Coal, stone, sand and gravel	W					W
Perry	Coal, crude oil	68,699					68,699
Piatt	—	—					—
Pike	Stone, sand and gravel	W					W
Pope	Fluorspar*, coal	19					19
Pulaski	Stone, clay	W			Clay products	W	2,215
Putnam	Sand and gravel	36					36
Randolph	Coal, stone, sand and gravel, crude oil	W					W
Richland	Crude oil	3,814					3,814
Rock Island	Stone, sand and gravel	W					W
St. Clair	Coal, stone, crude oil, sand and gravel	49,270	Iron oxide pigments, ground barite	W	Glass	W	W
Saline	Coal, crude oil, natural gas	15,234					15,234
Sangamon	Coal, sand and gravel, crude oil, stone	W					W
Schuyler	Sand and gravel, stone	135					135
Scott	Stone, clay, sand and gravel	W			Clay products	W	1,378
Shelby	Sand and gravel, stone, crude oil	440					440
Stark	Coal, sand and gravel	3,097					3,097
Stephenson	Stone, sand and gravel	532					532
Tazewell	Sand and gravel, clay	1,424			Clay products	W	W
Union	Stone, sand and gravel	W					W
Vermilion	Stone, sand and gravel, coal, clay	2,027			Clay products	W	W

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TABLE 3—Concluded

County	Mineral materials mined, in order of value	Value (in thousands)	Mineral materials processed, in order of value	Value (in thousands)	Mineral products manufactured, in order of value	Value (in thousands)	Total value (in thousands)
Wabash	Crude oil, sand and	W					W
Warren	Stone	\$ 763			Clay products	W	W
Washington	Crude oil, stone	W					W
Wayne	Crude	12,403					\$12,403
White	Crude oil, sand and gravel	16,521					16,521
Whiteside	Stone, sand and gravel, peat*	1,447					1,447
Will	Stone, sand and gravel, coal	12,429	Expanded perlite	W	Clay products, glass	W	19,648
Williamson	Coal, crude oil, natural gas	25,281					25,281
Winnebago	Stone, sand and gravel	3,574					3,574
Woodford	Sand and gravel	1,173					1,173
Undistrib- uted#	Peat*	W	Pig iron*	\$542,883	Coke*	82,816	42,595
Total		\$701,242		\$581,948		\$205,696	\$1,488,886

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.

* Peat, pig iron, and coke values withheld by county.

† Sulfur values included with mineral products manufactured to avoid disclosing individual company confidential data on lime (table 1).

‡ Value unknown; not included in total.

Fluorspar value included with Hardin County.

Includes values indicated by symbol W and gem stones that cannot be assigned to specific counties.

W - Withheld to avoid disclosing individual company confidential data; included with "Undistributed."

N.A. - Not available.

and secondary slab zinc were valued at 581.9 million dollars. Pig iron, which was produced in Cook and Madison Counties, accounted for 93 percent of that total value.

Illinois led the nation in the production of expanded perlite, ranked second in production of iron oxide pigments, and was fourth in the recovery of elemental sulfur.

Mineral Products Manufactured

Mineral products manufactured in the state from materials mined mainly in Illinois included cement, coke, lime, clay products, and glass. They were valued at 205.7 million dollars. Coke and clay products accounted for 60 percent and 34 percent, respectively, of this total value. Figures on the value of glass manufactured in Illinois were not available.

Employment and Wages

According to the U.S. Department of Commerce, the Illinois mineral industry provided employment to 102,669 people and accounted for a taxable payroll of 1,086 million dollars, 2.9 and 3.7 percent, respectively, of the total employment and payroll of the state. The number of employees by employment-size class and by kind of operation, according to the Standard Industrial Classification (SIC) Code, is shown in table 5. In table 6 Illinois mining

TABLE 4—MINERAL MATERIALS MINED AND/OR PROCESSED AND MINERAL PRODUCTS
MANUFACTURED IN ILLINOIS, BY COMMODITY, 1972

Commodity	Number of producing counties	County rank, by quantity produced*	Commodity	Number of producing counties	County rank, by quantity produced*
Barite, ground	1	St. Clair	Mica, ground	1	Cook
Bismuth	1	Cook	Natural gas	3	Coles, Saline, Williamson
Cement	3	Lee, Massac, La Salle	Natural gas liquids	1	Douglas
Clays	14	La Salle, Pulaski, Livingston, Crundy, Cook, Bond, Kankakee, Vermilion, McDonough, Tazewell	Peat	4	Lake, Whiteside, Kane, Cook†
Clay products	21	Q.N.A.†	Perlite, expanded	4	Cook, Will, Lake, De Kalb
Coal	24	Perry, Jefferson, St. Clair, Franklin, Fulton, Williamson, Randolph, Montgomery, Peoria, Saline	Pig iron	2	Cook, Madison‡
Coke	2	Cook, Madison	Rare earths	1	Du Page
Columbite	1	Cook	Sand and gravel, common	67	McHenry, Will, Kane, Grundy, Winnebago, White, Du Page, Rock Island, McLean, Cook
Crude oil	39	White, Lawrence, Fayette, Wayne, Marion, Crawford, Clay, Wabash, Hamilton, Richland	Sand, natural bonded molding	1	Fayette
Fluorspar	2	Hardin, Pope‡	Sand, silica	2	La Salle, Ogle
Gemstones	N.A.	N.A.	Silver	3	Jo Daviess, Hardin, Pope
Germanium	2	Hardin, Pope	Stone, crushed and broken	66	Cook, Will, St. Clair, Hardin, Livingston, Kankakee, Lee, Kane, Randolph, Adams
Glass	9	Q.N.A.†	Stone, dimension	2	Kane, Monroe
Gypsum, calcined	1	Lake	Sulfur	3	Cook, Crawford, Madison
Iron oxide pigments	3	St. Clair, Adams, Kane	Tripoli	1	Alexander
Lead	3	Hardin, Pope, Jo Daviess	Vermiculite, exfoliated	3	Cook, De Kalb, Macoupin
Lime	2	Cook, Adams	Zinc, primary	3	Jo Daviess, Hardin, Pope
			Zinc, secondary slab	2	Marion, Cook‡

Source: U.S. Bureau of Mines, Illinois Department of Mines and Minerals, and Illinois State Geological Survey.

* For commodities produced in more than 10 counties, only the first ten counties are listed.

† Q.N.A. Quantity not applicable.

‡ County rank estimated.

N.A. - Not available.

employment and payroll are shown as a percentage of the total state employment and total taxable payroll by counties.

Workers engaged in mining, quarrying, and oil and gas extraction received average weekly earnings of \$255.54 in 1972, an increase of \$6.36 over the 1971 average earnings, according to the Illinois Department of Labor (table 7). While average weekly earnings increased, the number of hours worked per week dropped by 2.8 to a level of 43.7 hours. Average hourly earnings in 1972 increased 45 cents over the previous year and reached \$5.16. Average weekly earnings and number of hours worked per week by workers engaged in mining, mineral processing, and mineral product manufacturing in 1971 and 1972 are shown in table 7.

Transportation of Minerals and Mineral Products

The shipment of mineral materials is a significant part of the transportation industry of Illinois. In 1972 more than 100 million tons of mineral materials mined in Illinois was shipped by truck and at least 54 million tons by railroad. Of the total tonnage shipped by truck, more than 50 percent was crushed stone, and most of the rest was sand and gravel. More than 90 percent of the total amount of mineral material shipped by railroad was coal. Materials

TABLE 5—ILLINOIS MINERAL INDUSTRY'S EMPLOYMENT AND PAYROLL, BY
STANDARD INDUSTRIAL CLASSIFICATION CODE, 1972

Standard industrial classification code	Industry	Number of employees, mid-March pay period	Taxable payroll, January- March (in thousands)	Number of reporting units, by employment-size class							500 or more
				1-3	4-7	8-19	20-49	50-99	100-249	250-499	
	Illinois										
	Total, all industry	3,577,217	\$7,373,554	88,810	37,783	32,808	15,893	5,378	3,265	1,059	796
	MINING	20,601*	56,146	303	149	174	87	31	28	9	7
10	Metal Mining	W	W	—	1	2	—	1	1	—	—
109	Miscellaneous metal ores	W	W	—	—	—	—	—	1	—	—
1099	Metal ores, n.e.c.†	W	W	—	—	—	—	—	1	—	—
1211	Bituminous coal	9,980	31,884	7	5	10	2	5	16	7	6
13	Oil and gas extraction	3,890	7,008	231	90	87	34	5	5	—	—
131	Crude petroleum and natural gas	2,165	4,231	164	50	33	19	3	4	—	—
138	Oil and gas field services	1,712	2,724	66	40	53	15	2	1	—	—
1381	Drilling oil and gas wells	960	1,463	19	16	23	8	2	1	—	—
1389	Oil and gas field services, n.e.c.†	710	1,176	43	23	29	6	—	—	—	—
14	Nonmetallic minerals, except fuels	4,750	11,048	56	48	70	47	16	5	1	—
141	Dimension stone	145	336	1	1	3	1	1	—	—	—
142	Crushed and broken stone	2,209	5,030	18	19	37	30	6	2	—	—
1422	Crushed and broken lime- stone	2,007	4,637	15	17	34	27	5	2	—	—
1429	Crushed and broken stone, n.e.c.†	134	294	—	—	3	1	1	—	—	—
144	Sand and gravel	1,777	4,243	29	23	26	15	9	—	1	—
1442	Construction sand and gravel	1,148	2,617	27	23	22	12	6	—	—	—
1446	Industrial sand	526	1,342	—	—	3	2	2	—	1	—
145	Clay and related minerals	133	264	1	1	2	—	—	1	—	—
1454	Fuller's earth	W	W	—	—	—	—	—	1	—	—
147	Chemical and fertilizer minerals	W	W	3	2	1	—	—	2	—	—
1473	Fluorspar	W	W	3	1	—	—	—	2	—	—
—	Administrative and auxiliary	1,654	5,322	7	5	4	4	4	1	—	—
	MINERAL PROCESSING	45,847*	\$130,874	10	8	15	16	7	15	8	19
3312	Blast furnaces and steel mills	36,920	105,812	5	4	1	3	2	2	4	14
333	Primary nonferrous metals	588	1,547	—	—	1	2	—	3	—	—
334	Secondary nonferrous metals	2,092	5,014	2	3	7	8	5	7	1	—
291	Petroleum refining	6,247	18,501	3	1	6	3	—	3	3	5
	MINERAL PRODUCT MANUFACTURING	6,203*	12,177	19	17	32	20	17	11	7	—
324	Cement	655	2,030	—	—	—	—	1	1	1	—
325	Structural clay products	1,612	3,019	4	2	6	8	5	5	1	—
3251	Brick and structural clay tile	929	1,426	1	—	3	4	5	1	1	—
3255	Clay refractories	288	743	—	—	2	1	—	2	—	—
3259	Structural clay products, n.e.c.†	395	850	3	2	1	3	—	2	—	—
326	Pottery and related products	2,051	3,369	1	1	6	—	2	1	5	—
3261	Vitreous plumbing fixtures	W	W	—	—	—	—	—	—	1	—
3264	Porcelain electrical supplies	W	W	—	—	—	—	—	—	1	—
3269	Pottery products, n.e.c.†	1,240	1,827	1	1	6	—	1	1	3	—
3274	Lime	W	W	1	2	—	2	2	—	—	—
328	Cut stone and stone products	283	593	5	7	7	1	2	—	—	—
3299	Nonmetallic mineral products, n.e.c.†	589	1,283	3	3	6	4	3	1	—	—
3295	Minerals, ground or treated	729	1,678	2	2	4	5	2	2	—	—
3296	Mineral wool	W	W	1	—	3	—	—	1	—	—
	OTHERS	30,018*	72,370	607	320	305	186	55	37	8	6
3532	Mining machinery	W	W	4	3	2	3	3	2	—	1
	Wholesalers	W	W	—	—	—	—	—	—	—	—
5091	Metals and Minerals, except petroleum	17,344	48,507	200	119	116	92	34	24	6	4
5092	Petroleum and petroleum products	9,522	23,285	382	190	175	81	16	9	2	1
46	Pipe line transportation	1,016	3,004	21	8	12	10	2	2	—	—
	Total, mineral related	102,669	1,086,268†								

Source: U.S. Department of Commerce Bureau of the Census, County Business Patterns, Illinois, 1972.

* Items included in total.

† Not elsewhere classified.

‡ Annual payroll: \$271,567 x 4 quarters.

W - Withheld to avoid disclosing individual company confidential data.

TABLE 6—ILLINOIS MINING EMPLOYMENT AND PAYROLL COMPARED TO
TOTAL STATE EMPLOYMENT AND PAYROLL, BY COUNTY, 1972

	Number of employees, mid-March pay period			Taxable payrolls, January-March		
	Mining total	State total	Total em- ployees in mining (%)	Mining total (in thousands)	State total (in thousands)	Mining, % of total payroll
Illinois	20,601	3,577,217	0.58	\$56,146	\$7,373,554	0.76
Bond	18	2,016	0.89	10	2,730	0.37
Bureau	32	7,101	0.45	72	10,678	0.67
Carroll	7	2,743	0.26	11	3,508	0.31
Champaign	33	32,799	0.10	74	51,642	0.14
Christian	44	6,565	0.67	53	10,247	0.52
Clark	106	2,534	4.18	170	3,569	4.76
Clay	519	3,192	16.26	858	4,119	20.83
Clinton	61	4,879	1.25	99	7,069	1.40
Coles	71	11,741	0.60	129	17,813	0.72
Cook	2,819	2,152,918	0.13	8,212	4,737,012	0.17
Crawford	215	4,970	4.33	541	8,711	6.21
Du Page	136	119,831	0.11	418	235,042	0.18
Edwards	46	1,548	2.97	66	2,082	3.17
Effingham	42	6,921	0.61	54	9,236	0.58
Fayette	305	3,464	8.80	567	4,346	13.05
Franklin	1,665	6,203	26.84	5,857	11,824	49.53
Fulton	699	7,571	9.23	2,365	14,729	16.06
Hamilton	55	907	6.06	123	1,077	11.42
Hancock	19	2,733	0.70	31	3,216	0.96
Hardin	690	1,022	67.51	1,773	2,149	82.50
Jackson	165	9,501	1.74	508	13,194	3.85
Jasper	41	1,224	3.35	60	1,375	4.36
Jefferson	1,117	8,063	13.85	2,966	13,269	22.35
Johnson	72	653	11.03	138	952	14.50
Kane	104	81,097	0.13	261	149,685	0.17
Lake	18	89,333	0.02	37	176,830	0.02
La Salle	509	32,246	1.58	1,269	57,821	2.19
Lawrence	310	3,311	9.36	639	5,128	12.46
Lee	32	6,840	0.47	86	11,379	0.76
Livingston	136	8,381	1.62	378	12,906	2.93
Logan	33	6,213	0.53	57	9,308	0.61
McHenry	163	27,837	0.59	447	49,386	0.91
Macon	46	42,894	0.11	59	85,011	0.07
Madison	233	62,103	0.38	562	129,679	0.43
Marion	255	9,737	2.62	504	14,911	3.38
Montgomery	393	6,867	5.72	958	10,931	8.76
Ogle	42	10,952	0.38	76	19,186	0.40
Peoria	492	75,509	0.65	1,461	161,263	0.91
Pike	23	2,729	0.84	29	3,341	0.87
Randolph	738	8,525	8.66	2,776	15,699	17.68
Richland	192	4,329	4.44	275	5,720	4.81
Rock Island	106	54,482	0.19	257	111,967	0.23
St. Clair	756	50,881	1.49	2,389	88,658	2.69
Vermilion	102	28,364	0.36	257	52,723	0.49
Wabash	173	2,749	6.29	296	4,050	7.31
Washington	100	1,794	5.57	173	2,502	6.91
Wayne	322	3,508	9.18	564	5,280	10.68
White	582	3,285	17.72	916	3,992	22.95
Whiteside	21	16,866	0.12	16	34,796	0.05
Will	268	58,029	0.46	806	119,106	0.68
Williamson	781	11,767	6.64	2,250	19,027	11.83
Winnebago	102	83,322	0.12	275	167,161	0.16
Undistributed*	103	22,054		231	41,468	

Source: U.S. Department of Commerce Bureau of the Census, County Business Patterns, Illinois, 1972.

* Mining present, but data withheld to avoid disclosure of individual reporting units in these counties: Adams, Boone, Brown, Calhoun, De Kalb, De Witt, Douglas, Edgar, Ford, Gallatin, Greene, Grundy, Henderson, Henry, Iroquois, Jo Daviess, Kankakee, Knox, McDonough, McLean, Macoupin, Marshall, Mason, Mercer, Monroe, Morgan, Perry, Piatt, Pope, Pulaski, Putnam, Saline, Sangamon, Schuyler, Scott, Shelby, Stark, Stephenson, Tazewell, Union, Warren, Woodford.

TABLE 7—AVERAGE WEEKLY EARNINGS, HOURS WORKED, AND HOURLY WAGES IN ILLINOIS MINERAL INDUSTRY, 1971-1972

Class of employment	1972			1971		
	Average weekly earnings	Average number of hours worked per week	Average hourly earnings	Average weekly earnings	Average number of hours worked per week	Average hourly earnings
Mining	\$225.54	43.7	\$5.16	\$219.18	46.5	\$4.71
Bituminous coal	247.07	43.4	5.69	251.52	47.0	5.35
Oil and gas extraction	173.55	40.5	4.28	163.18	40.7	4.01
Other	203.59	45.6	4.47	200.24	48.7	4.12
Mineral processing						
Blast furnaces and basic steel	211.07	41.2	5.12	183.22	40.3	4.55
Primary metal industries	193.64	42.6	4.54	169.66	40.5	4.19
Petroleum refining	223.93	42.2	5.30	203.57	41.7	4.88
Mineral product manufacturing						
Cement and clay products	154.43	40.5	3.81	146.34	40.7	3.60
Other stone and mineral products	183.07	42.4	4.32	175.05	42.6	4.11

Source: Illinois Department of Labor, Bureau of Employment Security.

such as pig iron, coke, and clay products also were shipped by railroad, trucks, and barges. Shipment of crude oil and natural gas was largely by pipeline.

Consumption of Minerals and Energy in Illinois

Because Illinois is a leading manufacturing state, it consumes a large variety of mineral materials each year. Data available for some of the mineral materials used in Illinois during 1971 and 1972 are shown in table 8.

In addition to mineral materials, Illinois consumed an estimated 3515.2 trillion Btu of energy during 1972, or 4.88 percent of the total energy consumed in the United States. This is an increase of 7.82 percent over the total energy used in Illinois in 1971 (table 9).

Acknowledgments

The cooperation of the Bureau of Mines of the United States Department of the Interior, the Illinois State Department of Mines and Minerals, and the Bureau of Employment Security of the Illinois Department of Labor has been invaluable in the preparation of this report. The assistance of mineral producers throughout Illinois who have provided information about their operations, has been especially helpful and is gratefully acknowledged.

Individual Commodities

MINERAL MATERIALS MINED

The mineral materials mined in Illinois during 1972 can be grouped into four major categories—fuels, industrial and construction materials, metals,

TABLE 8—ILLINOIS CONSUMPTION OF SELECTED MINERAL MATERIALS
COMPARED WITH NATIONAL CONSUMPTION, 1971-1972

		1972			1971		
Commodity	Unit	United States	Illinois percentage of		United States	Illinois percentage of	
			Illinois	United States mineral materials consumption		Illinois	United States mineral materials consumption
FUELS							
Coal	million tons	519.7	42.0	8.08	495.0	38.3	7.74
Coke	million tons	59.8	3.4	5.68	56.7	3.7	6.52
Distillate fuel oil	million bbl	1,066.1	55.3	5.18	971.0	49.5	5.09
Gasoline	million bbl	2,350.7	115.2	4.90	2,213.0	109.8	4.96
Kerosine	million bbl	85.9	4.3	5.01	90.9	3.2	3.56
Liquefied petroleum gases	million bbl	409.7	12.4	3.02	369.0	11.5	3.11
Natural gas	trillion cu ft	23.0	1.2	5.20	22.7	1.2	5.48
Residual fuel oil	million bbl	925.7	29.6	3.19	837.0	22.6	2.70
METALS							
Iron and steel scrap	million tons	94.3	N.A.	N.A.	82.6	8.2	9.93
Pig iron	million tons	89.1	N.A.	N.A.	81.2	6.4	7.88
Lead	thousand tons	1,485.3	N.A.	N.A.	1,431.0	155.0	10.83
Zinc (slab)	thousand tons	1,418.3	N.A.	N.A.	1,254.0	159.0	12.68
CONSTRUCTION MATERIALS							
Air cooled slag	million tons	22.0	1.2*	5.45	21.0	1.1*	5.24
Asphalt	million tons	32.1	1.9	5.91	30.0	1.9	6.36
Cement (portland)	million tons	88.9	3.6	4.05	76.8	3.3	4.29
Lightweight aggregate	million tons	18.0	0.6*	3.33	17.0	0.6*	3.52
Road oil	million tons	1.4	0.2	14.29	1.5	0.2	15.36
Sand and gravel	million tons	902.0	34.7	3.85	883.0	42.2	4.78
Stone	million tons	667.0	43.0	6.45	628.0	47.0	7.48
AGRICULTURAL AND CHEMICAL MATERIALS							
Feldspar	thousand tons	732.6	W	W	742.9	W	W
Fluorspar	thousand tons	1,352	67.4	4.98	1,344	89.9	6.69
Lime †	thousand tons	20,290.0	1,023.0	5.04	19,591.0	970.6	4.95
Potash	thousand tons	N.A.	N.A.	N.A.	4,606	518	11.25
Agricultural Chemical	thousand tons	N.A.	N.A.	N.A.	250	38	15.20
Salt	thousand tons	5,926	353	5.96	6,180	341	5.51
Evaporated Rock	thousand tons	15,044	1,304	8.66	13,640	870	6.38

Source: U.S. Bureau of Mines.

* Estimated.

† Excludes regenerated lime.

N.A. - Not available.

W Withheld to avoid disclosing individual company confidential data.

TABLE 9—FUELS AND ENERGY CONSUMED IN ILLINOIS, 1971-1972

Fuel	Units	1972	1971	Change from 1971-1972 (%)	Trillion Btu	
					1972	1971
Coal	thousand tons	42,028	38,289	+ 9.77	924.6	842.4
Natural gas	million cu ft	1,220,635	1,242,797	- 1.78	1258.5	1281.2
Gasoline	thousand bbl	115,526	109,818	+ 5.20	606.3	576.3
Kerosine	thousand bbl	4,317	3,234	+ 33.49	24.5	18.3
Distillate fuel oil	thousand bbl	55,276	49,467	+ 11.74	322.0	288.1
Residual fuel oil	thousand bbl	29,581	23,708	+ 24.77	186.0	149.1
Liquid petroleum gases	thousand bbl	15,544	14,192	+ 9.53	62.4	56.9
Hydropower	thousand kilo- watt hr	150,070	137,673	+ 9.00	1.6	1.4
Nuclear power	million kilo- watt hr	12,131	4,374	+177.34	129.3	46.6
Total				+ 7.82	3515.2	3260.3
Illinois percentage of United States total energy consumption					4.88	4.74
Percentage of total energy consumed in Illinois						
Coal					26.30	25.84
Natural gas					35.80	39.30
Oil products					34.17	33.39
Nuclear power					3.68	1.43
Hydropower					0.05	0.04
					100.00	100.00

Source: U.S. Bureau of Mines; American Petroleum Institute; and Federal Power Commission.

Fuel conversion factors:

Coal - 22,000,000 Btu/ton (@ 11,000 Btu/lb).	Distillate fuel oil - 5,825,000 Btu/bbl.
Natural gas - 1031 Btu/Mcf.	Residual fuel oil - 6,287,000 Btu/bbl.
LPG - 4,011,000 Btu/bbl.	Nuclear power - 10,660 Btu/net kwh
Gasoline - 5,248,000 Btu/bbl.	Hydropower - 10,494 Btu/kwh (1971)
Kerosine - 5,670,000 Btu/bbl.	10,478 Btu/kwh (1972)

and other minerals. The commodities listed in each of these categories and the statistical data for each commodity, including production, consumption, price, and shipping, are discussed below.

Fuels

Coal

Production—In 1972, Illinois produced 65.5 million tons of bituminous coal, valued at 402.3 million dollars—a 12.2 percent increase in production and a 26.1 percent increase in value over 1971 levels. The increase in production was due to a full year of strike-free operation, in contrast to 1971 when a 44-day strike at Illinois coal mines resulted in a production loss of about 10 percent.

TABLE 10—ILLINOIS COAL PRODUCTION, BY COUNTY, 1971-1972
(tons)

County	1972 Production*					1971 Production*				
	Number of mines	Underground	Strip	Total	Value†	Number of mines	Underground	Strip	Total	Value†
Christian	1†	2,036,524	—	2,036,524	\$ 12,504,257	1†	1,830,615	—	1,830,615	\$ 9,995,158
Douglas	1	1,241,316	—	1,241,316	7,621,680	1	926,278	—	926,278	5,057,478
Franklin	4	7,269,942	—	7,269,942	44,637,443	4	7,443,040	—	7,443,040	40,638,998
Fulton	4	—	4,375,307	4,375,307	26,864,384	5	—	4,353,204	4,353,204	23,768,494
Gallatin	3	1,746,245	646,244	2,392,489	14,689,882	3	1,701,257	433,180	2,134,437	11,654,026
Grundy	1‡	—	256,574	256,574	1,575,364	1‡	—	242,429	242,429	1,323,662
Jackson	2	—	142,238	142,238	873,341	2	—	87,061	87,061	475,353
Jefferson	4	6,427,931	945,256	7,373,187	45,271,368	4	6,018,644	1,017,979	7,036,623	38,419,962
Johnson	1	—	4,095	4,095	25,143	3	—	8,557	8,557	46,721
Knox	1	—	1,518,728	1,518,728	9,324,989	1	—	1,431,781	1,431,781	7,817,524
Macoupin	1	1,974,355	—	1,974,355	12,122,539	1	1,169,874	—	1,169,874	6,387,512
Mercer	2	29,638	10,623	40,261	247,202	2	33,433	16,863	50,296	274,616
Montgomery	2†	3,565,886	—	3,565,886	21,894,540	3†	3,451,902	—	3,451,902	18,847,385
Peoria	3	—	2,514,313	2,514,313	15,437,881	3	—	2,322,545	2,322,545	12,681,096
Perry	4	—	11,177,355	11,177,355	68,628,959	4	—	7,906,928	7,906,928	43,171,827
Pope	1	—	3,205	3,205	19,678	1	—	7,012	7,012	38,286
Randolph	4	940,786	3,041,174	3,981,960	24,449,234	3	739,713	2,461,601	3,201,314	17,479,175
St. Clair	3	2,325,849	4,996,866	7,322,715	44,961,470	4	1,606,978	4,529,975	6,136,953	33,507,763
Saline	8	1,236,918	1,212,613	2,449,531	15,040,120	8	1,398,980	1,033,646	2,432,626	13,282,138
Sangamon	1†	1,081,689	—	1,081,689	6,641,570	1†	1,002,746	—	1,002,746	5,474,993
Stark	1	—	502,231	502,231	3,083,698	1	—	659,013	659,013	3,598,211
Vermilion	1	16,203	—	16,203	99,486	1	32,272	—	32,272	176,205
Will	1‡	—	262,184	262,184	1,609,810	1‡	—	463,417	463,417	2,530,257
Williamson	8	1,822,513	2,196,593	4,019,106	24,677,310	8	2,098,194	1,986,122	4,084,316	22,300,365
Total	59	31,715,795	33,805,599	65,521,394	\$402,301,359	63	29,453,926	28,961,313	58,415,239	\$318,947,205
Total (%)		48.4	51.6				50.4	49.6		

* Production figures, Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1971, 1972.

† Value calculated at an average of \$5.46 per ton for 1971 and \$6.14 for 1972.

‡ One mine operated at junction of Christian, Montgomery, and Sangamon Counties.

§ One mine operated at junction of Grundy and Will Counties.

Five counties—Perry, Jefferson, St. Clair, Franklin, and Fulton—contributed more than 50 percent of the total bituminous coal production (table 10). In Franklin County all coal was mined underground, whereas in Perry and Fulton Counties all coal was strip mined. In Jefferson and St. Clair Counties, both methods were used. The five largest producing companies—Peabody Coal, Consolidation Coal Company, Freeman Coal Mining Company, Old Ben Coal Corporation, and Southwestern Illinois Coal Corporation—produced approximately 70 percent of the state's total coal output (table 11).

In 1972, strip mines produced 33.8 million tons of coal, an increase of 17 percent over the 1971 level. They accounted for 51.6 percent of the total state output. In spite of this increase, total strip mine production was still approximately 9 percent below the peak production of 1967 (fig. 1). Production from underground mines was 31.7 million tons, the highest level achieved since 1951 and 48.4 percent of the state's total production.

TABLE 11—ILLINOIS COAL PRODUCTION, BY COMPANY, 1972

Company	Number of mines		Production (tons)	Percentage of total production	Number of employees
	underground	strip			
Peabody Coal Co.	6	4	15,917,044	24.29	3,189
Consolidation Coal Co.	1	3	7,793,534	11.90	916
Freeman Coal Mining Co.	4		6,368,895	9.72	1,580
Old Ben Coal Corp.	3		6,280,622	9.58	1,180
Southwestern Illinois Coal Corp.		2	5,922,364	9.04	331
Amax Coal Co.		3	4,471,874	6.82	362
Midland Coal Co.		5	3,995,804	6.10	542
The United Electric Coal Co.		3	3,982,369	6.08	469
Zeigler Coal Co.	3		2,722,643	4.16	788
Sahara Coal Co.	3	1	2,188,214	3.34	668
Inland Steel Co.	1		2,140,416	3.27	488
Monterey Coal Co.	1		1,974,355	3.01	429
Eads Coal Co.		1	945,256	1.44	62
Forsyth Energy, Inc.		1	263,009	0.40	56
Tab Mining Company, Inc.		1	116,965	0.85	< 50
Jader Fuel Co.		1	101,805		< 50
Big Ridge Coal Co.		1	80,265		< 50
Brown Brothers Excavating Co.		1	68,533		< 50
Harrisburg Coal Co.	1		64,106		< 50
Hazel Dell Coal Corp.	1		29,638		< 50
Elk Coal Co.		1	25,273		< 50
V-day Coal Co.	1		16,203		< 50
Barbara Kay Coal Co.	1		13,388		< 50
Diversified Minerals Co.		1	10,714		< 50
Viola Materials Co.		1	10,623		< 50
Cold Water Coal Co.		1	10,182		< 50
Deaton Coal Co.		1	4,095		< 50
E & L Coal Co.		1	3,205		< 50
Total	59	{ 26 underground 33 strip	65,521,394	100.00	11,237 { 7870 underground 3367 strip

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1972.

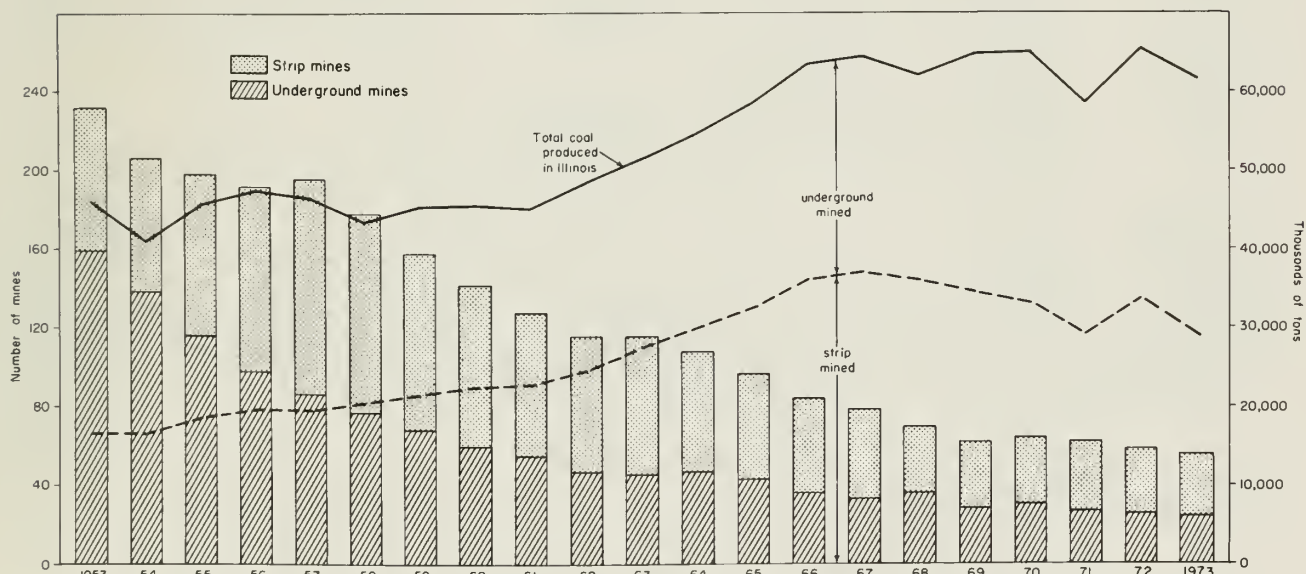


Fig. 1 - Trends in Illinois coal production by type and number of mines, 1953-1973.

TABLE 12—CUMULATIVE COAL PRODUCTION IN ILLINOIS, BY COUNTY, 1882-1972

County	Cumulative production* (tons)	Years active	Last year active	County	Cumulative production* (tons)	Years active	Last year active
Adams	341,924	26	1969	Marshall	12,516,141	70	1951
Bond	7,355,569	57	1942	Menard	13,462,005	84	1965
Brown	65,347	40	1963	Mercer	15,501,943	85	1972
Bureau	53,823,055	80	1964	Monroe	8,284	13	1941
Calhoun	96,247	27	1912	Montgomery	127,571,350	91	1972
Cass	212,477	53	1941	Morgan	190,787	64	1951
Christian	293,147,604	88	1972	Moultrie	2,032,236	16	1924
Clark	4,482	2	1955	Peoria	88,531,470	91	1972
Clay	801	1	1963	Perry	263,482,280	91	1972
Clinton	38,656,325	79	1960	Pike	5,081	8	1942
Coles	198,932	6	1888	Pope	23,747	14	1972
Crawford	45,400	16	1961	Putnam	10,071,893	29	1938
Douglas	12,891,322	27	1972	Randolph	116,152,934	91	1972
Edgar	915,698	41	1952	Richland	154	1	1890
Effingham	796	1	1890	Rock Island	3,846,169	67	1948
Franklin	574,518,972	74	1972	St. Clair	321,571,815	91	1972
Fulton	283,085,039	91	1972	Saline	238,460,856	91	1972
Gallatin	17,673,466	88	1972	Sangamon	237,472,480	86	1972
Greene	693,191	84	1967	Schuyler	7,747,691	84	1966
Grundy	44,308,562	89	1972	Scott	612,476	61	1942
Hamilton	22,097	16	1905	Shelby	4,119,763	67	1950
Hancock	771,281	72	1958	Stark	8,261,398	82	1972
Hardin	40	1	1890	Tazewell	17,633,802	75	1956
Henry	22,910,053	84	1965	Vermilion	164,951,081	91	1972
Jackson	97,511,427	91	1972	Wabash	198,226	36	1964
Jasper	23,739	11	1939	Warren	685,466	73	1954
Jefferson	75,995,417	69	1972	Washington	18,165,386	88	1969
Jersey	120,350	59	1951	White	1,676,741	36	1940
Johnson	291,913	57	1972	Will	43,897,376	91	1972
Kankakee	8,858,008	44	1969	Williamson	404,788,044	91	1972
Knox	58,019,660	91	1972	Woodford	7,810,160	70	1951
La Salle	65,547,638	79	1960				
Livingston	10,111,437	80	1961	Total cumulative production, 1882-1972		4,306,314,366	
Logan	14,533,376	84	1968				
Macon	11,000,468	65	1947	Estimated production, all counties, 1833-1881		<u>73,386,123</u>	
Macoupin	269,390,482	90	1972				
McDonough	2,634,903	69	1951	Total cumulative production, 1833-1972		4,379,700,489	
McLean	5,544,139	47	1928				
Madison	164,295,772	83	1964				
Marion	39,247,722	82	1963				

* Production figures: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1972.

Cumulative coal production by counties for 1972 is shown in table 12. Of the 4.4 billion tons produced, 857 million (19.5 percent) has been produced by strip mining and the remaining 3.5 billion tons (80.5 percent) by underground mining.

Employment and Wages—An average of 303 men were employed per underground mine and 102 men per strip mine in Illinois during 1972 (tables 13, 14).

TABLE 13—COAL MINES AND MINING EMPLOYEES IN ILLINOIS,
BY TYPE OF MINING, 1963-1972

Year	Number of mines			Number of employees		
	All mines	Strip	Underground	All mines	Strip	Underground
1972	59	33	26	11,237	3,367	7,870
1971	63	36	27	10,571	3,483	7,088
1970	64	35	29	10,214	3,429	6,785
1969	62	34	28	9,591	3,647	5,944
1968	69	33	36	9,538	3,510	6,028
1967	77	44	33	8,805	3,413	5,392
1966	84	48	36	8,994	3,428	5,566
1965	97	54	43	8,790	3,320	5,470
1964	108	62	46	9,079	3,376	5,703
1963	116	71	45	8,891	3,394	5,497

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1972.

TABLE 14—AVERAGE PRODUCTION AND AVERAGE NUMBER OF EMPLOYEES
PER MINE IN ILLINOIS, 1963-1972

Year	Underground mines		Strip mines	
	Av. output per underground mine (tons)	Average number of employees per mine	Av. output per strip mine (tons)	Average number of employees per mine
1972	1,219,838	303	1,024,412	102
1971	1,090,886	262	804,480	97
1970	1,090,192	233	950,530	98
1969	1,077,237	212	1,019,411	107
1968	724,568	167	1,092,535	106
1967	837,879	163	844,654	78
1966	753,671	155	751,678	71
1965	594,685	127	604,834	61
1964	540,834	124	483,164	54
1963	542,800	122	383,330	48

Source: Illinois State Department of Mines and Minerals, Annual Coal, Oil and Gas Report, 1972.

The average number of employees per strip mine has more than doubled within the past 10 years, while the average output per strip mine has increased 167 percent. For underground mines, the number of employees per mine has increased 148 percent during the last 10 years, and the average output per mine has increased 125 percent. The 30 percent increase in average employment at underground mines since 1970 is mainly the result of the enforcement of the Federal Health and Safety Act of 1969.

Average hourly earnings for bituminous coal miners increased from \$5.35 in 1971 to \$5.69 in 1972. While average hourly earnings increased, the number of hours worked per week dropped by 3.6 hours to 43.4 hours (table 7).

Employment provided by bituminous coal mining in 1972 represented less than 0.3 percent of the state's total employment (table 5). However, in Gallatin County, coal mining accounted for 63.4 percent of that county's total

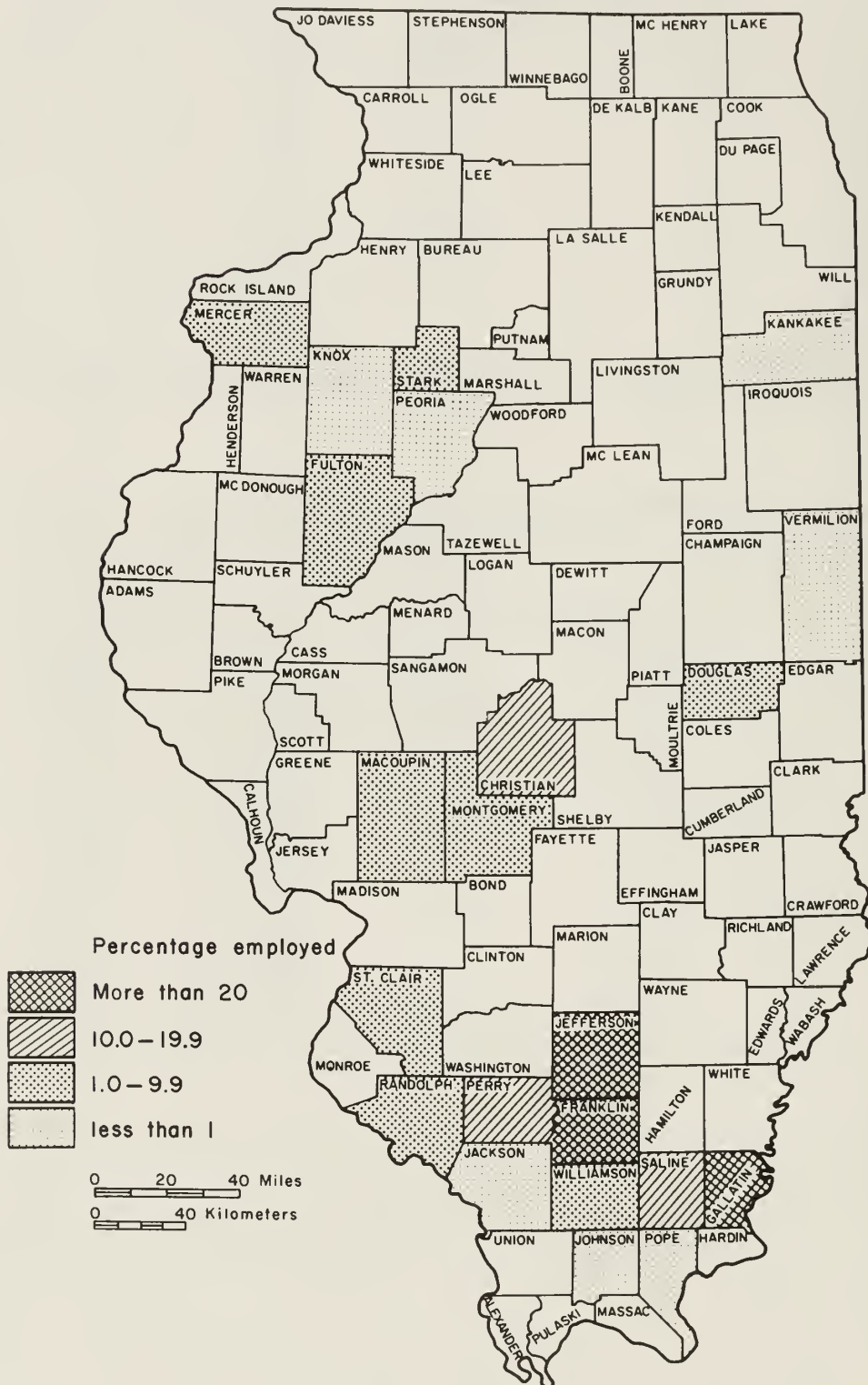


Fig. 2 - Employment in bituminous coal mining, by county, in percentage of total employment for each county, 1972. Source: 1972 Illinois County Business Patterns, U.S. Bureau of Census; 1972 Annual Coal, Oil, and Gas Report, Department of Mines and Minerals, Illinois.

employment. In Franklin and Jefferson Counties, bituminous coal mining represented a significant portion of the total employment (fig. 2).

Mine Productivity—Average productivity of underground mines in Illinois, which started to decline 3 years ago when the Federal Health and Safety Act of 1969 was enforced, declined further to 17.87 tons per man-day—24 percent lower than the 22.17 tons per man-day achieved in underground mines in 1968. In spite of this decline, the productivity of Illinois underground mines was still 36 percent higher than the national average of 11.91 tons per man-day.

Strip mine productivity of 37.09 tons per man-day in 1972 was 6.3 percent higher than the 1971 level of 34.89 tons. In spite of the increase, 1972 productivity was still 10.8 percent lower than that reported in 1967 (41.59 tons per man-day). The decline in strip mine productivity is due, in part, to the gradual increase in the average thickness of overburden that must be removed before the coal can be extracted.

Shipments—Of the 67.2 million tons of Illinois coal shipped in 1972, 53.1 million tons was used by electric utilities, 4.3 million tons was consumed by coke and gas plants in the manufacture of metallurgical coke, 8.5 million tons was consumed for other industrial uses, and 991,000 tons was accounted for by retail sales (table 15). About 48 percent of the 53.1 million tons of Illinois coal shipped to electric utilities was consumed within the state and the rest was shipped to surrounding Midwestern and southeastern states. The market

TABLE 15—ILLINOIS COAL SHIPMENTS BY STATE DESTINATION AND CONSUMING SECTOR, 1968-1972
(thousand tons)

Consuming sector	Wisconsin	Minnesota	Iowa	Michigan	Missouri	Indiana	Kentucky	Southern states*	Exports and other uses	Illinois	Total
Electric utilities											
1968	4118	3526	2240	198	3983	3125	2047	—	783	25,539	45,559
1969	4826	2905	2204	286	5029	2623	2447	1188	916	26,622	49,046
1970	6115	2917	2731	154	5702	2667	2804	1475	492	25,688	50,745
1971	5206	2258	3043	424	5934	2409	3803	2271†	4	22,204	47,556
1972	5526	2490	3306	323	7042	2731†	3595	2795†	—	25,329	53,137
Coke and gas plants											
1968	—	—	—	—	—	1103	—	—	6	1,200	2,309
1969	—	—	—	—	—	1806	—	—	32	1,538	3,376
1970	—	—	—	—	—	2871	—	—	128	1,618	4,617
1971	—	—	—	—	—	2589	—	41	172	1,424	4,226
1972	—	—	—	—	—	2810†	—	—	182	1,288	4,280
Retail dealers											
1968	115	27	56	30	85	51	—	—	26	1,362	1,752
1969	85	45	62	25	74	14	—	—	8	1,141	1,454
1970	66	29	40	22	79	22	—	—	9	1,015	1,282
1971	50	26	17	18	43	19	—	—	3	723	899
1972	15	27	16	1	79	220	—	—	3	630	991
All others											
1968	1253	42	1485	584	1692	1133	41	—	103	7,618	13,951
1969	1080	101	1368	759	1426	938	—	—	47	7,102	12,821
1970	1078	88	1320	605	1258	844	—	66	69	5,657	10,985
1971	746	64	965	446	1156	526	—	—	7	4,189	8,099
1972	793	59	1130	318	1553	492	—	—	14	4,084	8,443
Total											
1968	5486	3595	3781	812	5760	5412	2088	—	1078	35,719	63,731
1969	5991	3051	3634	1070	6529	5381	2447	1188	1306	36,403	67,000
1970	7259	3034	4091	781	7039	6404	2804	1475	795	33,978	67,660
1971	6002	2348	4025	888	7133	5543	3803	2271	151	28,540	60,704
1972	6334	2576	4452	642	8674	6253	3595	2795	536	31,331	67,188

Source: U.S. Bureau of Mines Bituminous Coal and Lignite Distribution, 1968, 1969, 1970, 1971, 1972.

* Includes Alabama and Mississippi (1970-1972), Georgia and Florida (1970-1972), and Tennessee (1969-1972).

† Estimated.

‡ Includes minor amount of industrial and/or retail coal.

for Illinois utility coal is showing definite growth in Missouri, Iowa, the south-eastern states of Alabama, Mississippi, Georgia, Tennessee, and Florida, and in Mexico, where electric power demands are growing rapidly. However, in Minnesota and Wisconsin, Illinois coal is losing its utility market to the low-sulfur coal from western states that meets the required sulfur oxides emission standards.

More than 30 percent of the Illinois coal shipped for coking purposes was consumed in Illinois, and the remainder was shipped to near-by steel plants in northwestern Indiana. The consumption of Illinois coal in Indiana for metallurgical purposes during 1972 did not show any significant growth over the 1970-1971 consumption levels.

Approximately 64 percent of the retail coal shipped from Illinois mines in 1972 was consumed within the state. The remainder was shipped to near-by upper Midwestern states, with Indiana and Missouri as the second and third largest consumers.

Of the Illinois coal used for other industrial purposes in 1972, approximately half was consumed within the state. Other important consumers of industrial coal from Illinois, in order of amount consumed, were Missouri, Iowa, Wisconsin, and Indiana.

Transportation—In 1972, 74.87 percent of all Illinois coal shipments were sent by railroad. Coal sold to local trade generally was shipped by truck and accounted for 15.90 percent of the total shipments, while 9.10 percent was shipped by barge. Coal sales to railroad companies declined again in 1972, from 659,973 tons in 1971 to 21,751 tons in 1972 (Illinois Dept. Mines and Minerals).

Tonnages of Illinois coal handled by railroads in 1972 are shown below:

Illinois Central Gulf Railroad Co.	21,064,916
Burlington Northern Incorporated	10,840,503
Missouri Pacific Lines	5,276,079
Penn Central Transportation Co.	2,410,655
Chicago and North Western Transportation Co.	3,375,478
Chicago and Eastern Illinois Railroad	2,038,687
Chicago, Rock Island & Pacific Railroad Co.	1,424,356
Others	2,602,336
Total shipped by rail (tons)	49,057,921

Consumption—In 1972, Illinois consumed 42.0 million tons of coal. Approximately 76.8 percent was used by electric utilities, 7.7 percent was used by coke and gas plants, 3.4 percent was sold by retail dealers, and 12.1 percent was consumed for other uses, principally industrial (table 16).

Of the 42.0 million tons of coal used in Illinois in 1972, 31.3 million tons, or 74.6 percent, was shipped from mines within the state. In 1968, however, 35.7 million tons, or 82.2 percent, had been bought from these mines. This decline is mainly attributable to the replacement of Illinois coal in the utility market by low-sulfur coal from Wyoming and Montana and in the industrial market by low-sulfur Appalachian coal.

TABLE 16—SHIPMENT OF COAL INTO ILLINOIS, BY STATE OF ORIGIN
AND BY CONSUMING SECTOR, 1968-1972

Consuming sector	Illinois	West Kentucky	Indiana	West Virginia and East Kentucky*	Ohio and East Pennsylvania	Wyoming and Montana	Total coal consumed in Illinois†
Electric utilities							
1968	25,539	1,885	646	24	127	—	28,221
1969	26,622	3,063	656	4	—	—	30,393‡
1970	25,688	2,175	514	1	—	1,075	29,453
1971	22,204	1,431	604‡	43	—	3,648‡	27,930
1972	25,329	1,586	393	200	—	4,786	32,294
Coke and gas plants							
1968	1,200	—	—	1,869	—	—	3,069
1969	1,538	—	—	2,175	—	—	3,713
1970	1,618	—	—	2,070	—	—	3,688
1971	1,424	—	50‡	1,847	26	‡	3,347
1972	1,288	—	—	1,955	—	—	3,243
Retail dealers							
1968	1,362	665	43	1,231	11	—	3,312
1969	1,141	587	48	1,287	14	—	3,077
1970	1,015	237	2	1,329	5	3‡	2,591
1971	723	59	1‡	1,082	4	2‡	1,871
1972	630	13	9	759	2	2‡	1,415
All others							
1968	7,618	258	462	525	—	—	8,863
1969	7,102	254	282	401	22	—	8,061
1970	5,657	188	245	476	13	—	6,579
1971	4,189	92	170‡	689	1	‡	5,141
1972	4,084	118	51	823	—	—	5,076
Total							
1968	35,719	2,808	1,151	3,649	138	—	43,465
1969	36,403	3,904	986	3,867	36	—	45,244‡
1970	33,978	2,600	761	3,876	18	1,078	42,311
1971	28,540	1,582	825	3,661	31	3,650	38,289
1972	31,331	1,717	453	3,737	2	4,788	42,028

Source: U.S. Bureau of Mines, Bituminous Coal and Lignite Distribution, Calendar Years 1968-1972.

* Includes tonnages from Virginia and northeastern Tennessee.

† From District 15 (Kansas, Missouri, and northeastern Oklahoma).

‡ Includes 48,000 tons not accounted for; origin unknown.

* - estimated.

Shipments of coal to utilities from other states into Illinois have increased from 2.8 million tons in 1968 to 7.0 million tons in 1972. In the past, most of the imported utility coal came from western Kentucky (70.3 percent in 1968). By 1972, western Kentucky's share had declined to 22.8 percent while, shipments from Montana and Wyoming provided 68.7 percent of the coal imports for utilities. Because of its low sulfur content, western coal is being used in increasing amounts by Illinois electric utilities in their effort to comply with the air-quality regulations set by the Federal Environmental Protection Agency (EPA). The delivered cost of western coal is about twice as much, on an equivalent heating basis, as the cost of Illinois and western Kentucky coals. The amount of western coal shipped into Illinois has increased more than fourfold since 1970, and it accounted for 11.4 percent of the total coal consumed in Illinois in 1972.

From 1968 through 1972, an average of 58 percent of the total coal consumed by Illinois coke and gas plants and about 60 percent of the coal used by retail dealers in Illinois were imported from West Virginia, Virginia, and eastern Kentucky (Districts 3, 6, 7, and 8). More than 80 percent of the industrial coal used in Illinois comes from Illinois mines, with the remainder imported mainly from Appalachia.

Crude Oil

Production—Illinois crude oil production, which started to decline 10 years ago, dropped 10.8 percent in 1972 from the 1971 production level. During 1972, the 24,716 wells actively operating produced 34.9 million barrels of crude oil that, at an average unit value of \$3.47 per barrel, was valued at 118 million dollars. Although 41 counties produced crude oil (table 17), more than 75 percent of the total came from only 10 counties:

<u>County</u>	<u>(%)</u>	<u>County</u>	<u>(%)</u>
White	12.8	Crawford	5.1
Lawrence	12.2	Clay	4.6
Fayette	10.7	Wabash	4.2
Wayne	10.2	Hamilton	3.3
Marion	9.4	Richland	3.2

In 1972, 360 oil fields were producing in Illinois, but more than 66 percent of the crude oil production came from the fields listed in table 18. The southeastern Illinois area, which includes a number of fields, accounted for 18 percent of the state's total production.

The Oil and Gas Section of the Illinois State Geological Survey annually estimates the crude oil reserves in the state. According to their latest estimate, Illinois had 196.9 million barrels of crude oil reserves as of January 1, 1973 (Jacob Van Den Berg, personal communication, 1974).

Refineries—Of the 299.8 million barrels of crude oil that were received at Illinois refineries in 1972, 270 million barrels were from other states or foreign countries. According to the U.S. Bureau of Mines, 42 million barrels of the total domestic crude oil received at Illinois refineries was of Illinois origin. As Illinois produced only 34.9 million barrels of crude oil in 1972 and only 214 thousand barrels were drawn from stocks, the 42 million barrel figure for Illinois reported by the Bureau of Mines must have included 6.9 million barrels from unidentified sources.

According to *The Oil and Gas Journal*, 11 refineries were operating in the state as of January 1, 1973, and had a total capacity of 1,041,500 barrels per calendar day, 20.4 percent more than the capacity a year earlier. The *Journal* also gives details on individual refineries (April 2, 1973, p. 108).

The new oil refinery at Joliet, operated by Mobil Oil Corporation, was completed in 1972 and began operation at full capacity (160,000 barrels per calendar day) in early 1973. The major portion of the crude oil for this refinery is imported from Canada and the rest is shipped from the southwestern United States. The Joliet refinery is the second largest in Illinois and can convert 89 percent of its input into gasoline and distillate fuel oils, 60.1 percent and 28.9 percent, respectively. It also can process "sour" (high-sulfur) crudes.

Refinery output is reported by the U.S. Bureau of Mines by refining districts instead of by states. The state of Illinois is included in the Indiana-

Illinois-Kentucky Refining District, which encompasses Illinois, Indiana, Kentucky, Tennessee, Michigan, and the western third of Ohio. Table 19 indicates the output from refineries in this district, by product, for the years 1970, 1971, and 1972. Considerable increases in output during 1972 were reported for gasoline (6.3 percent), distillate fuel oil (7.0 percent), and residual fuel oil (9.8 percent).

TABLE 17—CUMULATIVE CRUDE OIL PRODUCTION IN ILLINOIS, BY COUNTY, 1888-1972

County	Cumulative production, 1888-1972* (thousand bbl)	1972			1971	
		Production* (thousand bbl)	Percentage of state total production	Value† (in thousands)	Production (thousand bbl)	Value† (in thousands)
Adams	179	3	0.0	\$ 10	4	\$ 14
Bond	7,122	46	0.1	161	54	187
Brown	225	3	0.0	9	4	14
Champaign	7	—	—	—	†	—
Christian	24,232	355	1.0	1,231	418	1,450
Clark-Cumberland	88,717	367	1.1	1,273	442	1,534
Clay	127,106	1,587	4.6	5,506	1,821	6,319
Clinton	81,905	678	2.0	2,354	708	2,457
Coles	22,295	236	0.7	818	303	1,051
Crawford	224,037	1,762	5.1	6,113	1,979	6,867
De Witt	2,295	160	0.5	554	180	625
Douglas	3,543	37	0.1	128	38	132
Edgar	3,267	113	0.3	390	103	357
Edwards	44,267	547	1.6	1,898	588	2,040
Effingham	15,024	304	0.9	1,054	356	1,235
Fayette	378,355	3,742	10.7	12,986	4,677	16,229
Franklin	68,843	667	1.9	2,314	773	2,682
Gallatin	48,062	673	1.9	2,335	742	2,575
Hamilton	128,958	1,161	3.3	4,028	1,399	4,855
Jasper	48,387	672	2.0	2,332	825	2,863
Jefferson	79,073	967	2.8	3,355	1,096	3,803
Lawrence	375,586	4,258	12.2	14,775	4,545	15,771
Macon	885	5	0.0	18	7	24
Macoupin	236	1	0.0	5	†	—
Madison	16,900	137	0.4	476	121	420
Marion	394,239	3,295	9.4	11,434	3,542	12,291
McDonough-Hancock‡	5,345	39	0.1	136	42	146
Monroe	2	—	—	—	—	—
Montgomery	116	†	—	1	1	3
Moultrie	91	3	0.0	10	3	10
Perry	725	20	0.0	70	17	59
Randolph	4,139	97	0.3	337	110	382
Richland	96,705	1,099	3.1	3,815	1,340	4,650
St. Clair	3,239	49	0.1	171	82	285
Saline	20,269	369	1.1	1,282	545	1,891
Sangamon	2,350	177	0.5	612	145	503
Schuyler	1	—	—	—	—	—
Shelby	1,519	33	0.1	115	40	139
Wabash	103,234	1,461	4.2	5,069	1,671	5,798
Washington	27,709	637	1.8	2,211	682	2,367
Wayne	227,640	3,574	10.2	12,403	4,149	14,397
White	266,496	4,475	12.8	15,529	5,370	18,634
Williamson	1,321	164	0.5	570	162	562
Other*	901	901	2.6	3,125	—	—
Total	2,945,547	34,874	100.0	\$121,013	39,084	\$135,621

* 1972 production includes 901 thousand barrels which could not be assigned to individual fields or counties.

† Value calculated at average price of \$3.47 per barrel.

‡ Less than 500 barrels.

§ No oil production reported for Hancock County in 1971-1972.

TABLE 18—ILLINOIS CRUDE OIL PRODUCTION, BY MAJOR FIELD, 1972

Field	County	Crude oil production (thousand bbl)	Percentage of state total
Southeastern Illinois	Wabash	6,318	18.1
	Lawrence		
	Crawford		
	Clark		
	Cumberland		
	Jasper		
Clay City Consolidated	Clay	3,774	10.8
	Wayne		
	Richland		
	Jasper		
Louden	Fayette	3,422	9.8
	Effingham		
Salem Consolidated	Marion	3,108	8.9
	Jefferson		
New Harmony Consolidated	White	2,106	6.0
	Wabash		
	Edwards		
Roland Consolidated	White	1,209	3.5
	Gallatin		
Sailor Springs Consolidated	Clay	1,135	3.3
	Jasper		
	Effingham		
Dale Consolidated	Franklin	890	2.6
	Hamilton		
	Saline		
Johnsonville Consolidated	Wayne	711	2.0
Phillipstown Consolidated	White	<u>646</u>	<u>1.9</u>
	Edwards		
Sub total		23,319	66.9
Others		<u>11,555</u>	<u>33.1</u>
Total		34,874	100.0

Source: Illinois State Geological Survey Oil and Gas Section.

Synthetic Natural Gas Plants—As of the end of 1972, plans for the construction of five synthetic natural gas (SNG) plants in Illinois had been announced (table 20). If all five plants are completed, they will be capable of producing 641 million cubic feet of SNG per day (234 billion cubic feet per year), or the equivalent of 20 percent of Illinois' total natural gas consumption in 1972 (1.2 trillion cubic feet).

Consumption—Consumption of major petroleum products in Illinois from 1968 through 1972 is shown in table 21. In 1972, gasoline consumption in Illinois increased by 5.19 percent, and represented almost 5 percent of the total gasoline consumed in the United States. In spite of the increase and the amount of gasoline consumed within the state, Illinois continued to remain a net export-

ing state. The consumption of distillate and residual fuel oil also continued to increase in 1972 and at rates that exceeded the national rate of increase. The 25 percent increase in residual fuel oil consumption has resulted chiefly from the use of an additional 4.6 million barrels of residual fuel oil by oil companies as plant fuel.

During 1972 distillate fuel oil consumption in Illinois increased 12 percent. This increase was due mainly to a 2.6 million barrel increase in the use of heating oil and a 2.2 million barrel increase in consumption by electric utilities for replacing natural gas, which was in short supply.

TABLE 19—REFINERY OUTPUT, BY PRODUCT, FROM ILLINOIS-INDIANA-KENTUCKY REFINING DISTRICT, 1970-1972*

Product	1972 (thousand bbl)	1971 (thousand bbl)	1970 (thousand bbl)	Change from 1970-1971 (%)	Change from 1971-1972 (%)
Gasoline	440,487	414,509	396,270	+ 4.6	+ 6.3
Jet fuel	42,973	42,125	37,991	+ 10.9	+ 2.0
Liquefied gases	17,034	16,727	15,619	+ 7.1	+ 1.8
Kerosine	15,041	14,959	17,488	- 14.5	+ 0.5
Distillate fuel oil	168,356	157,394	152,920	+ 2.9	+ 7.0
Residual fuel oil	50,219	45,728	47,586	- 3.9	+ 9.8
Petrochemical feed stocks	9,144	8,002	8,724	- 8.3	+ 14.3
Special naphthas	3,755	3,373	3,080	+ 9.5	+ 11.3
Lubricants	5,256	5,495	6,348	- 13.4	- 4.3
Wax	406	528	432	+ 22.2	- 23.1
Coke	20,229	18,045	18,500	- 2.5	+ 12.1
Asphalt	31,487	32,784	30,549	+ 7.3	- 4.0
Road oil	2,735	3,383	4,069	- 16.9	- 19.2
Still gas for fuel	31,335	30,480	30,666	- 0.6	+ 2.8
Miscellaneous	1,444	1,468	1,189	+ 23.5	- 1.6

Source: U.S. Bureau of Mines, Petroleum Statements, Monthly, January 1971; January 1972; January 1973.

* Includes refineries in Illinois, Indiana, Kentucky, Tennessee, Michigan, and western Ohio.

TABLE 20—STATUS OF PETROLEUM SYNTHETIC NATURAL GAS (SNG) PLANTS IN ILLINOIS, JUNE 1, 1973

Company	Type	Petroleum product used	Synthetic natural gas output (million cu ft/day)	Investment (in millions)	Contractor	Plant	
		Quantity (1000 bbl/day)				Location	Status
Trunkline Gas Company	Naphtha	30	130	\$50	—	Blue Mound	Process design and siting under study.
Central Illinois Light Company	Naphtha	12	60	20	—	Peoria	Feasibility study completed.
Continental Oil Company	Naphtha or liquid petroleum gas	33	125	—	—	Northern Illinois	On-stream in 1975; Northern Illinois Gas Company signed letter of intent for synthetic natural gas output, committing Conoco for 20 years.
Northern Illinois Gas Company	Natural gas liquids	52	166	55	Beechtell	Minooka	1974 completion; feedstock from San Juan Oil Company/Mapco.
Peoples Gas Company	Naphtha	33	160	50	Kellogg	Will County	Preliminary design work in progress; completion due in 1974-1975; 10,000 b/d from Union Oil; 10-year contract.

Source: Oil and Gas Journal, June 25, 1973, p. 108-109.

TABLE 21—CONSUMPTION OF MAJOR PETROLEUM PRODUCTS IN ILLINOIS, 1968-1972.

Product	Unit	1972	1971	1970	1969	1968
Gasoline (excluding naphtha)*	thousand bbl	115,526	109,818	105,323	103,067	99,696
Kerosinet	thousand bbl	4,317	3,234	3,583	3,468	3,394
Distillate fuel oil†	thousand bbl	55,276	49,467	45,517	44,498	42,795
Residual fuel oil†	thousand bbl	29,581	22,835	28,618	25,456	24,136
Liquified gases‡	thousand					
Propane	gal	644,123	587,372	586,713	621,916	554,980
Butane		7,176	7,602	7,466	3,687	2,310
Butane-propane mix		<u>1,546</u>	<u>1,101</u>	<u>1,429</u>	<u>1,132</u>	<u>737</u>
Total		652,845	596,075	595,608	626,735	558,027
Asphalt‡	tons					
Paving		1,030,779	1,230,528	1,301,532	1,022,367	965,551
Roofing products		603,501	416,084	505,631	521,553	734,996
All other products		<u>222,875</u>	<u>264,062</u>	<u>298,537</u>	<u>590,932</u>	<u>691,553</u>
Total		1,857,155	1,910,674	2,105,700	2,134,852	2,392,100
Road oil‡	tons	210,660	236,917	322,629	293,055	199,997

* American Petroleum Institute Weekly Statistical Bulletins, April 27, 1973, v. 54, no. 17, p. 8; April 9, 1971, v. 52, no. 15, p. 10; April 3, 1970, v. 51, no. 14, p. 7.

† U.S. Bureau of Mines Sales of Fuel Oil and Kerosine, Annual Statements, 1968-1972.

‡ U.S. Bureau of Mines Sales of Liquefied Petroleum Gases and Ethane, Annual Statements, 1968-1972.

§ U.S. Bureau of Mines Sales of Asphalt, Annual Statements, 1968-1972.

Natural Gas

Production—Of the 3 billion cubic feet of natural gas produced in Illinois in 1972, some 1.2 billion cubic feet came from gas wells and 1.8 billion from oil wells (table 22). Almost all of the gas produced from oil wells in Illinois was either flared or vented at the site. Gas produced from gas wells and fed into pipelines was marketed in Illinois for \$334,000 at an average well-head value of 28.0 cents per thousand cubic feet.

The sharp rise in marketed production of natural gas from 498 million cubic feet in 1971 to 1,194 million cubic feet in 1972 was due mainly to new gas production from the Devonian formations of the Mattoon oil field (table 23). The Mattoon field, which lies between the cities of Mattoon and Effingham and produced no gas in 1971, produced 777.3 million cubic feet (65.1 percent) of the total 1972 natural gas production. The Raleigh, Eldorado East, and Harco fields, all in Saline County, accounted for 291 million cubic feet of natural gas in 1972, a 9.5 percent increase over the 1971 production level. In Williamson County, the Corinth South, Johnston City East, Pittsburg North, and Stiritz fields produced 125.6 million cubic feet, compared to the 228.7 million cubic feet produced in 1971, a decline of 45 percent.

Consumption—In Illinois, 1,221 billion cubic feet of natural gas was consumed in 1972 (table 24), compared to 1,243 billion cubic feet in 1971. The 1.78 percent decline in consumption is by no means an indication of a declining demand for the commodity, but, rather, is the first impact of the national gas shortage.

Residential and commercial consumption of gas in Illinois increased during 1972, but electric utility consumption declined 42 percent (fig. 3), which was 40 times the national rate of decline in the use of natural gas by electric utilities. It is the result of a significant curtailment of sales of natural gas to Illinois electric utilities, which were supplied on an interruptible basis. Industrial and some other users also showed declines in gas consumption.

Natural Gas Liquids

Production—Illinois produced 168,000 barrels of natural gas liquids (associated dissolved) during 1972, according to the American Petroleum Institute. This was a 9.8 percent increase over the 1971 production level (table 25).

Industrial and Construction Materials

Clays

Production—Almost 3 percent of the total clay production of the nation in 1972 came from Illinois. Included were 1,609,537 tons of common clay,

TABLE 22—PRODUCTION AND CONSUMPTION OF NATURAL GAS IN ILLINOIS, 1968-1972
(million cubic feet)

Production					
Year	Withdrawals			Disposition	
	From gas wells	From oil wells	Total	Marketed*	Vented and flared
1972	1,194	1,806	3,000	1,194	1,806
1971	498	3,997	4,495	498	3,997
1970	198	4,774	4,972	198	4,774
1969	158	3,735	3,893	158	3,735
1968	183	4,299	4,482	183	4,299

Consumption					
Year	Net Illinois receipts	plus { Illinois marketed production* }	less { Added to Illinois underground storage }	less { Transmission loss and unaccounted for }	equal { Total Illinois consumption }
1972	1,269,192	1,194	39,910	9,841	1,220,635
1971	1,338,285	498	87,592	8,394	1,242,797
1970	1,268,207	198	78,193	6,821	1,183,391
1969	1,157,446	158	48,160	14,269	1,095,175
1968	1,078,575	183	46,034	28,860	1,003,864

Source: U.S. Bureau of Mines Minerals Yearbooks, 1968-1971; Natural Gas Production and Consumption, 1972: U.S. Bureau of Mines, 1973.

* Revised, U.S. Bureau of Mines.

TABLE 23—PRODUCTION OF NATURAL GAS IN ILLINOIS,
BY FIELD AND COUNTY, 1971-1972

Gas field	County	Natural gas production (million cu ft)		Change from 1971-1972 (%)	Year of field discovery
		1972	1971		
Corinth South	Williamson	19.0	128.4	- 85.2	1970
Eldorado East	Saline	135.2	178.6	- 24.3	1953
Harco East (1972)	Saline	51.9	60.7	- 14.5	1954
Harco, Harco East,					1954
Raleigh South (1971)					
Johnson City East	Williamson	80.8	99.3	- 18.6	1965
Mattoon	Coles	777.3	—	—	1948
Omaha	Gallatin	—	4.1	—	1940
Pittsburg North	Williamson	8.2	0.4	+1950.0	1962
Raleigh	Saline	103.9	26.4	+ 293.6	1962
Stiritz	Williamson	17.6	0.6	+2833.3	1971
Total		1193.9	498.5	+ 139.5	

Source: Illinois State Geological Survey Oil and Gas Section.

TABLE 24—CONSUMPTION OF NATURAL GAS IN ILLINOIS AND IN
THE UNITED STATES, BY CONSUMER CLASS, 1972

Consumer class	Illinois			United States			Percentage of total natural gas consumed in Illinois
	Quantity (million cu ft)	Change from 1971 (%)	Percentage of total consumption	Quantity (million cu ft)	Change from 1971 (%)	Percentage of total consumption	
Residential	487,845	+ 5.45	39.97	5,125,982	+ 3.10	22.28	9.52
Commercial	218,160	+ 7.16	17.87	2,286,561	+ 5.24	9.94	9.54
Industrial	398,617	- 2.02	32.66	8,167,096	+ 0.04	35.49	4.88
Electric utilities	72,796	-42.17	5.96	3,978,673	- 0.36	17.29	1.83
Other consumers*	6,328	- 7.57	0.52	321,421	- 4.42	1.40	1.97
Total delivered to consumers	1,183,746	- 1.81	96.98	19,879,733	+ 1.24	86.40	5.95
Other uses†	36,889	- 0.78	3.02	3,129,712	+ 2.97	13.60	1.18
Total consumption	1,220,635	- 1.78	100.00	23,009,445	+ 1.47	100.00	5.30

Source: U.S. Bureau of Mines.

* Includes municipalities and public authorities that use natural gas for institutional heating, street lighting, and other purposes.

† Includes lease and plant fuel, pipeline fuel, and extraction loss.

106,003 tons of refractory clay, and a small amount of absorbent clay. Illinois clay production in 1972 remained about the same as in 1971. Common clay production, which represents 90 percent of the total clay produced in Illinois, declined slightly, whereas refractory clay production, after declining by almost 30 percent in 1971, increased by 18 percent in 1972. A 2.8 percent decline in absorbent clay production in 1972 represented the largest decline in production in recent years and was consistent with the nationwide trend.

Clays were mined in 14 Illinois counties (table 26). The largest amount, 943,127 tons, was mined in La Salle County. Common clays were mined in 11 counties by 16 companies. Refractory clay was mined in four counties by four companies, and absorbent clay was mined only in Pulaski County.

Clay mining operations in Illinois have been steadily declining in recent years. In 1972, only 25 pits were reported in operation, compared to 49 in 1968.

Consumption and Uses—The common clays and shale produced in Illinois are principally used in the manufacture of brick, sewer pipe, drain tile, cement, and lightweight aggregate. Of the 1972 production of common clays and shale, 32 percent was used in the production of common and face brick. In the past 5 years the quantity of clay produced in Illinois for the manufacture of brick has steadily declined, a decline mainly attributable to the strong competition from other construction materials and to the importation of clays from southern states at a relatively lower cost.

The production of clays for sewer pipe and drain tile has also declined in the past 2 years. A general decline in the market for unglazed structural tile and competition from producers located in adjoining states have resulted in decreased demand.

In spite of strong competition from Wisconsin, Indiana, and Missouri producers of lightweight aggregates, the amount of clay mined for use in the manufacture of lightweight aggregates in Illinois is increasing. The production of clay for use in the manufacture of portland and masonry cement has nearly doubled in the past three years.

The refractory clay produced in Illinois is used in the manufacture of refractory bricks, pottery, and other clay products. During the past 5 years the amount of refractory clay produced has declined by 57 percent—from 246,740 tons in 1968 to 106,003 tons in 1972. Increased imports of refractory clay from near-by states are mainly responsible.

TABLE 25—PRODUCTION OF NATURAL GAS LIQUIDS IN ILLINOIS, 1968-1972
(thousand barrels)

Year	Nonassociated	Associated-dissolved	Total
1972*	0	168	168
1971	0	153	153
1970	0	231	231
1969	1	405	406
1968	1	389	390

Source: Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada and United States Productive Capacity as of December 31, 1972: American Gas Association, American Petroleum Institute, Canadian Petroleum Association, v. 27, May 1973, p. 200.

* Preliminary data.

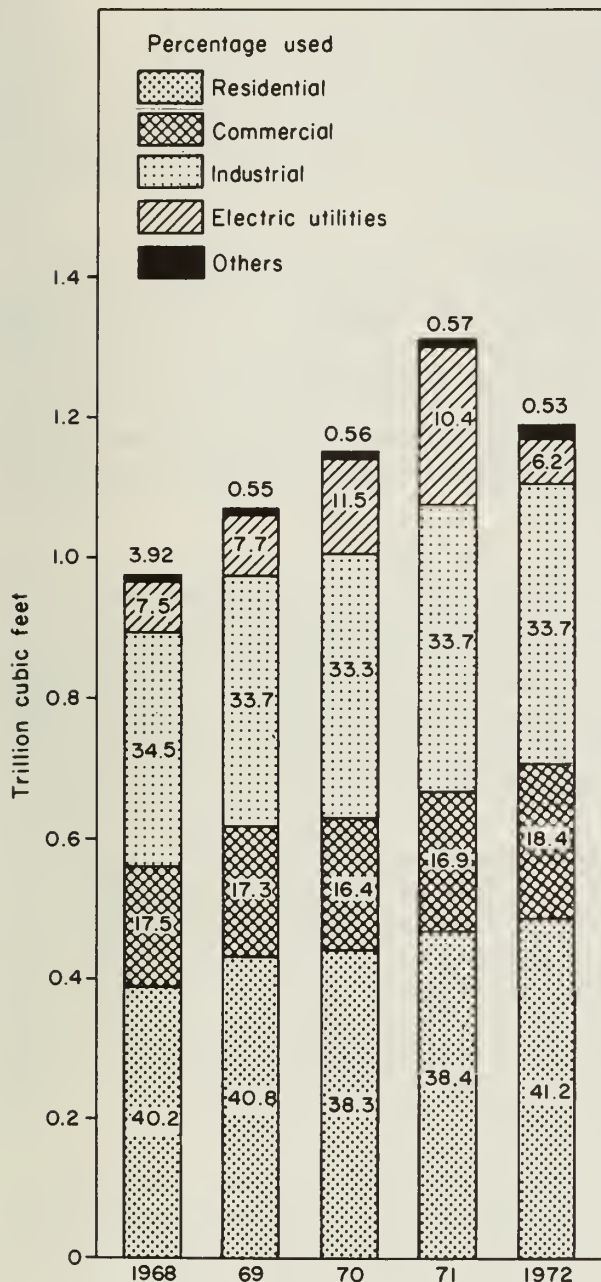


Fig. 3 - Natural gas consumed in Illinois, by consumer class, 1968-1972. (Excludes extraction loss, lease and plant fuel, and pipeline fuel.) Source: U.S. Bureau of Mines.

TABLE 26—PRODUCTION OF CLAYS IN ILLINOIS BY COUNTY, TYPE, AND USE, 1972

County	Number of operations	Production (tons)	Type and use (tons)												Value
			Common clay and shale (tons)						Refractory clay (fire clay) (tons)			Absorbent clay (fuller's earth) (tons)			
			Common brick	Face brick	Light-weight aggregate	Cement	Sewer pipe	Drain tile	Fire brick	Pot-tery	Refrac-tories	Animal litter	Animal feed filler	Other uses	
Bond	1	62,500	—	62,500	—	—	—	—	—	—	—	—	—	—	\$103,125
Brown	1	3,964	—	—	—	—	—	3,964	—	—	—	—	—	—	5,153
Cook	2	W	W	—	—	—	—	—	—	—	—	—	—	—	W
Fayette	1	3,670	—	—	—	—	—	3,670	—	—	—	—	—	—	4,400
Grundy	1	W	—	—	—	—	—	—	W	—	W	—	—	—	W
Kankakee	3	W	—	W	—	—	—	W	—	—	—	—	—	—	W
Knox	1	37,517	—	37,517	—	—	—	—	—	—	—	—	—	—	37,517
La Salle	6	943,127	—	42,402	W	W	—	—	—	—	W	—	—	—	1,704,094
Livingston	3	167,642	—	91,302	—	—	50,000	26,340	—	—	—	—	—	—	461,754
McDonough	2	W	—	1,142	—	—	—	—	—	—	W	—	—	—	W
Pulaski	1	W	—	—	—	—	—	—	—	—	—	W	W	W	W
Scott	1	15,434	—	—	—	—	—	—	15,434	—	—	—	—	—	88,282
Tazewell	1	W	W	W	—	—	—	—	—	—	—	—	—	—	W
Vermilion	1	130,430	—	52,620	77,810	—	—	—	—	—	—	—	—	—	W
W		<u>351,256</u>	<u>1,160,270</u>						<u>90,569</u>			<u>W</u>			<u>909,743</u>
Total	25	1,715,540	1,609,537						106,003						\$3,314,068

Source: United States Bureau of Mines.

W - Withheld to avoid disclosing individual company confidential data; included in state total, except for fuller's earth.

Most of the absorbent clay produced in Illinois is used as animal litter, in pesticides, and in related products. Production of absorbent clay has declined in Illinois during the past 5 years.

Fluorspar

Production—Illinois continued to be the leading fluorspar-producing state, contributing 53 percent of the total fluorspar shipments. Illinois produced 135,940 tons of finished fluorspar and shipped 132,405 tons during the year. Of the total shipped, 75,188 tons were of acid grade (more than 97 percent CaF_2) and 57,217 tons were of metallurgical grade (less than 97 percent CaF_2). The depressed market for acid-grade fluorspar had little impact on Illinois acidspars shipments, which during 1972 were about 4 percent higher than in 1971 (table 27).

All the fluorspar mined in Illinois came from Hardin and Pope Counties, where mining operations on a regular basis are carried out by the Minerva Oil Company and the Ozark-Mahoning Company. The Minerva Oil Company employed 112 men during 1972 and produced 157,606 tons of crude ore. Their mining operations were carried out at Deardorff-Crystal Mine, Gaskins Mine, and Minerva Mine No. 1. The Minerva Oil Company's Crystal froth flotation concentrating plant was closed down in August because of the depressed market for acid-grade fluorspar. The plant operated at its optimum capacity prior to its shutdown and treated almost four times the total amount of ore processed during 1971.

The Ozark-Mahoning Company reported employment of 78 men and production of 270,373 tons of crude fluorspar during 1972. No production was reported from the mines operated by Rosiclare Lead and Fluorspar Mining Company, Tamora Mining Company, or O. R. Austin and Sons. Hastie Mining Company, which has been in operation intermittently for the past 10 years, produced a small tonnage of fluorspar during 1972.

Construction of two new fluorspar mines being developed in Illinois progressed during 1972. Ozark-Mahoning Company's Knight Mine, located 2 miles

west of the company's concentrating plant in Rosiclare, will have an 850-foot shaft with working levels at 550 and 750 feet and will produce 400 tons per day of high- and low-grade fluorspar. The low-grade fluorspar will be treated at a new heavy media mill before going to the Rosiclare concentrator. The Minerva Oil Company's Spivey Mine will have a capacity of 200 to 250 tons per day and will be developed above the 600-foot level. In the course of development, 800 tons of ore have already been produced from the mine.

Consumption—The reported consumption of fluorspar in the United States increased from 1,344,742 tons in 1971 to 1,352,149 tons in 1972 (fig. 4) but was lower than the 1972 apparent consumption (production + imports - exports + change in stocks) of 1,488,933 tons. The sharp rise in apparent consumption (13 percent in a single year) was principally the result of a build-up of importers' stocks.

In 1972, Illinois consumed 67,428 tons of fluorspar, or about 5 percent of the total fluorspar consumed in the United States. Illinois consumption has been increasing, while Illinois shipments, as a percentage of total United States consumption, are decreasing (table 27). The increase in Illinois consumption is due primarily to the rise in steel production and the replacement of open-hearth furnaces by basic oxygen and/or electric furnaces, which use more fluorspar per ton of steel output. A similar growth trend is also evident in other major steel-producing states, such as Pennsylvania, Indiana, and Ohio.

Sand and Gravel

Production—A total of 39.9 million tons of sand and gravel, valued at 61.7 million dollars, was produced in Illinois in 1972. The total production included 22.2 million tons of sand and 17.7 million tons of gravel. These figures represented a 15 percent decrease in quantity and an 8 percent decrease in value from the 1971 levels. The average unit value increased by 12 cents to a record high level of \$1.54 per ton. The increase in unit value, for the most part, represents the inflationary conditions affecting land prices, higher labor and material costs, and other costs arising from environmental control measures. Because pit sites are being located farther away from the major markets or metropolitan areas, increases in haulage cost also affect the unit price.

TABLE 27—FLUORSPAR SHIPMENTS AND CONSUMPTION, ILLINOIS
AND UNITED STATES, 1963-1972
(tons)

Year	Shipments					Consumption		
	Illinois			United States total	Illinois shipments as percent of U.S.			Illinois consumption as percent of U.S.
	Acid- grade	Metallurgical- grade	Total			Illinois	United States*	
1963	92,478	39,582	132,060	199,948	66.0	47,597	736,350	6.46
1964	84,151	43,303	127,454	217,137	58.7	54,972	831,561	6.61
1965	88,700	70,440	159,140	240,932	66.1	56,697	930,127	6.10
1966	103,568	72,607	176,175	253,068	69.6	56,772	1,065,124	5.33
1967	120,388	89,819	210,207	295,643	71.1	60,521	1,091,158	5.55
1968	87,152	101,173	188,325	252,411	74.6	64,521	1,243,414	5.19
1969	47,776	40,704	88,480	182,567	48.5	78,727	1,356,624	5.80
1970	86,729	61,479	148,208	269,221	55.1	89,065	1,372,404	6.49
1971	72,514	65,537	138,051	272,071	50.7	89,971	1,344,742	6.69
1972	75,188	57,217	132,405	250,347	52.9	67,428	1,352,149	4.99

Source: U.S. Bureau of Mines.

* Fluorspar consumed includes domestic and foreign material.

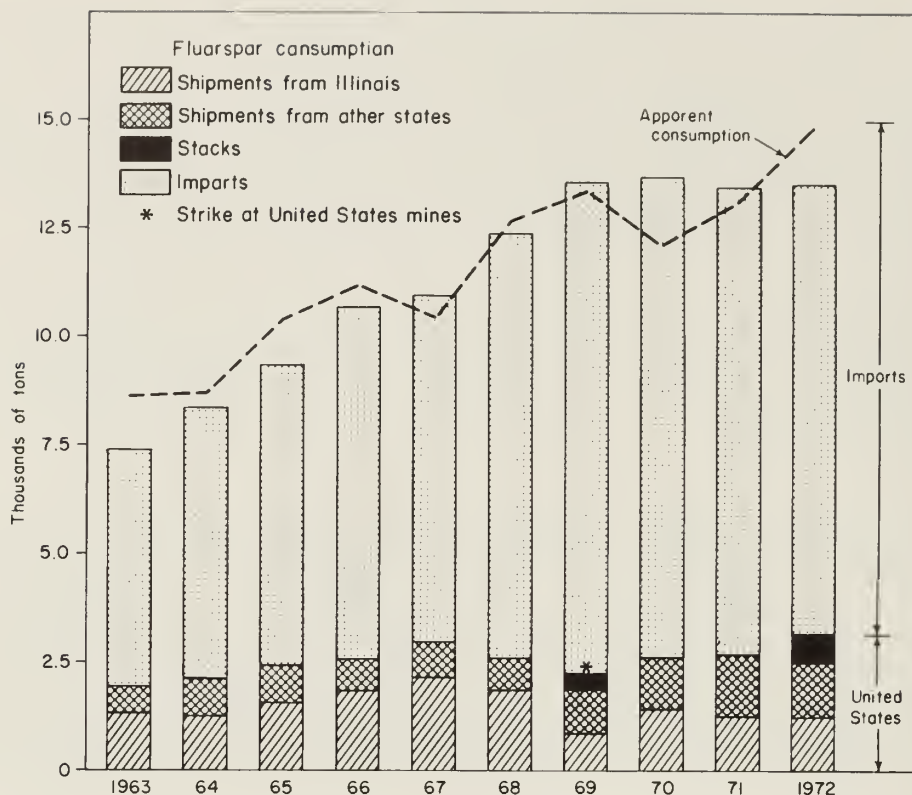


Fig. 4 - Reported consumption of fluorspar in the United States, by source of origin, 1963-1972. Source: U.S. Bureau of Mines.

Government and contractor operations have never been an important source of sand and gravel in Illinois, and their role has declined during the past 10 years (fig. 5). During 1972, government and contractor operations supplied only 78,000 tons of sand and 318,000 tons of gravel, or 0.35 and 1.80 percent, respectively, of the state's total output. A total of 271 sand and gravel operations were quarried by 207 companies in 68 counties (fig. 6) and (table 28).

Of the 22.2 million tons of sand produced in 1972 in Illinois, 5.2 million tons was sold for industrial purposes, a 9 percent increase in quantity and a 14 percent increase in value over the 1971 levels. Industrial sand was produced in Fayette, La Salle, Lee, Logan, Ogle, St. Clair, and White Counties.

Consumption and Uses—During 1972, sand and gravel sold or used by producers in Illinois totaled 39.9 million tons, 7 million less than 1971 consumption (table 29). This decline was due principally to a 7.22 percent decrease in the value of the nonresidential construction permits issued and a 10.36 percent decrease in the number of private and public residential construction permits issued (table 30).

Thirty-eight percent of the sand and gravel produced in 1972 for construction aggregates was used for building, 48 percent for paving, and 12 percent for fill. From 1963 through 1972, the usage of sand and gravel for paving has increased by 28 percent. The production of sand and gravel, which increased

rapidly from 1963 through 1968 (fig. 7), seems to be leveling off with the decline in construction activity.

More than 75 percent of the total industrial sand produced in 1972 was sold in the unground form for use in glass manufacturing, as molding sand, blasting sand, engine sand, and for filtration and hydrofracturing in oil wells. Ground sand was sold for use in making chemicals, abrasives, enamels, fillers, glass, and pottery, and for foundry purposes.

Stone

Production—The production of crushed and broken stone in Illinois decreased from 57.3 million tons in 1971 to 56.2 million tons in 1972. The

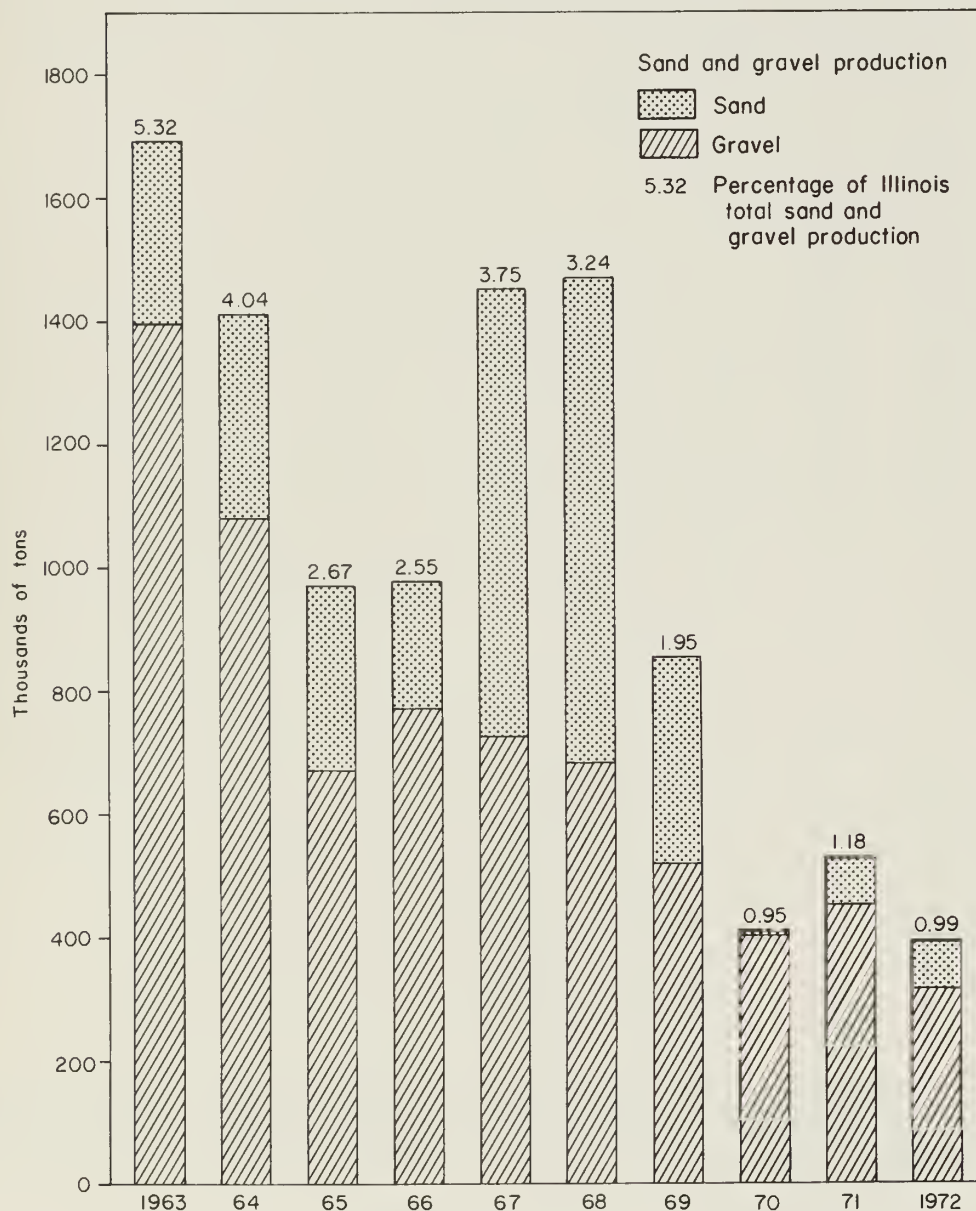


Fig. 5 - Sand and gravel produced by government and contractor operations in Illinois, 1963-1972. Source: U.S. Bureau of Mines.

TABLE 28—PRODUCTION OF SAND AND GRAVEL IN ILLINOIS, BY

Number of companies*																
County	Common sand				Common gravel					Unground Industrial Sand						
	Building	Paving	Pill	Other	Building	Paving	Pill	Miscel- laneous	Other	Glass (for melting only)	Molding	Blast	Engine	Filtration	Oil (hydro- fracturing)	Other uses
Adams	1		1	1					1							
Alexander						1										
Bond	3	3	1		3	2	2	1								
Boone	1		2		2	2	1	1								
Brown	(Uses not indicated)															
Bureau	2	2	3		4	7	4									
Carroll	1				1	1	1	1								
Champaign	6	4	2	1	4	5	1	1	1							
Clark	3	2	3		2	4	3									
Clinton	1	4	5			2	1									
Coles	1	3	3			2		1								
Cook	2		3		2	2	2									
Crawford	3	1	3		2	3	1	1	1							
Cumberland	1				1	1										
De Kalb	3	4	3		1	3	1	1								
De Witt	1				1											
Du Page	3	3	2	1	2	4	1									
Fayette	2	2				1					1					
Ford	2	2			3	4	1	1	1							
Fulton	2				2	1	1									
Gallatin	1	2	2		1	1										
Grundy	1	1			1	1										
Henderson	1															
Henry	1	1	1													
Iroquois	1		1			1	1									
Jackson	1	1	1													
Jo Daviess	1	1	1		1	1	1									
Kane	4	3	6		7	8	6	2	1							
Kankakee	2	1														
Kendall					1			1								
Lake	2	2	4		3	2	2	1								
La Salle	3			1	2	2	1	3	4	5	4	3	2	1	2	3
Lawrence	3		1	1	1	4		1	1							
Lee	1	1		1	2	2					1					
Livingston			1			2										
Logan	3	2	3		2	3			1				1			
McDonough			1													
McHenry	11	8	5		2	2	1	1								
McLean	1	11	2		2	16	2									
Macon	2	3	3		2	3	1									
Madison	2	3	1	1												
Marshall	1	1	1		1	3		1								
Mason		1					1									
Massac	1	1				3	1		1							
Moultrie							1									
Ogle	2	1			2	1				1	1					1
Peoria	3	1			2	2	1									
Pike	1				1	2										
Pope						1										
Putnam						1										
Randolph	2	2														
Rock Island	4	3	2		2											
St. Clair	1	1	1													
Sangamon	4	2	3	1	3	3	2	2								1
Schuyler			1			1										
Scott	1	1	1													
Shelby	2	2	1		1	1	1									
Stark		1				2										
Stephenson	1	1	1		1	1										
Tazewell	2	7			3	8										
Union						1										
Vermilion		1	2		1	3	2	1	2							
Wabash	2	1	2		2	2	2									
White	3	2	2		1	4		1				1				
Whiteside	1	2			1	1										
Will	5	3	6		5	4	1	1	1							
Winnebago	4	4	6	1	5	6	1	2								
Woodford	3	2	2		2	5	1	2								
Undistributed and W	1	1				2										
Total	123	111	95	9	90	150	49	28	14	6	7	4	3	1	2	5
Percent of total																

Source: U.S. Bureau of Mines.

* Companies and/or divisions producing sand, gravel, and industrial sand.

W - Withheld to avoid disclosing individual company data.

† Column may not add to total given because a number of companies operated in more than one county.

COUNTY, BY USE, AND BY METHOD OF TRANSPORTATION, 1972

Number of companies*															
Ground industrial sand															
Abrasives	Chemical uses	Enamel	Filler	Foundry uses	Glass	Pottery, porcelain, and tile	Other uses		Total		Production		Method of shipment		
									Number of companies†	Number of operations	Quantity (thousand tons)	Value (in thousands)	Truck (tons)	Railroad (tons)	Water (tons)
									1	1	W	W	W		
									1	1	6	W	6		
									4	4	W	W	W		
									4	4	W	W	W		
									1	1	12	\$ 12	12		
									10	10	417	432	417		
									1	1	W	W	W		
									7	9	673	722	673		
									4	4	359	457	359		
									5	5	153	153	153		
									4	4	239	W	239		
									4	4	911	W	905	6	
									3	3	347	294	347		
									2	2	W	W	W		
									5	5	549	671	549		
									1	1	W	W	W		
									4	5	1,086	W	1,086		
									3	3	W	W	W		
									4	6	W	W	W		
									4	4	W	W	W		
									2	2	260	259	260		
									1	1	W	W	W		
									1	1	< 1	< 1	< 1		
									1	1	W	W	W		
									3	3	W	43	W		
									1	1	50	57	50		
									1	1	W	W	W		
									9	10	3,203	4,001	3,203		
									2	2	16	W	16		
									2	2	W	W	W		
									6	6	849	1,080	849		
2	2	1	1	3	1	2	1		10	14	4,898	17,634	4,397	501	
									4	4	458	467	458		
									3	3	W	W	W		
									2	2	W	W	W		
									5	5	438	511	435	3	
									1	1	W	2	W		
									14	16	6,472	7,014	6,472		
									5	17	W	W	W		
									4	4	W	W	W		
									3	3	341	382	341		
									3	4	W	W	W		
									2	2	W	W	W		
									5	5	W	W	W	W	
									1	1	13	W	13		
									2	3	W	W	W	W	
									2	3	W	W	W		
									2	2	W	W	W		
									1	1	2	< 1	2		
									1	1	W	W	W		
									1	2	W	W	W		W
									4	5	W	785	W		W
									1	1	W	181	W		
									4	4	880	1,150	880		
									1	1	W	W	W		
									2	2	W	W	W		
									2	2	W	W	W		
									1	1	W	W	W		
									1	1	71	133	71		
									3	8	W	W	W		
									1	1	16	12	16		
									7	7	304	215	289	15	
									3	3	17	W	W		
									5	5	1,106	993	1,106		
									2	2	W	W	W		
									11	12	3,272	4,588	3,208	64	
									8	9	1,414	1,454	1,139	275	
									5	5	702	1,173	702		
											10,295	17,107	9,937	353	122
2	2	1	1	3	1	2	1		207	271	39,929	61,696	38,590	1,217	122
													96.7	3.0	0.3

value increased from 94.0 million dollars to 94.2 million. The total included 48.8 million tons of limestone and 7.5 million tons of dolomite. Over 30 percent of the stone was quarried for road base stone, 18 percent for concrete aggregate, and about 10 percent for surface treatment aggregate (table 31).

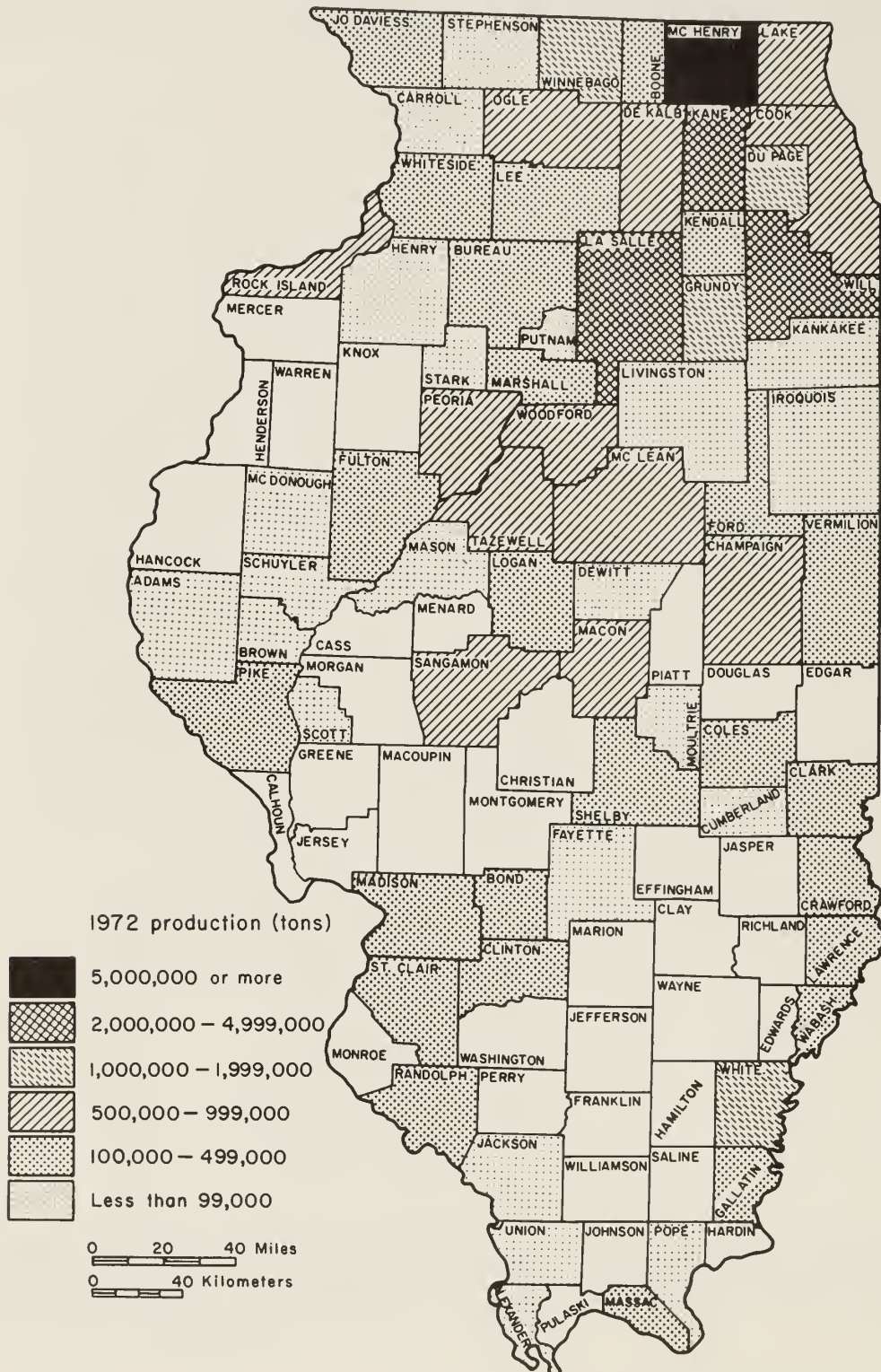


Fig. 6 - Illinois sand and gravel production, by county, 1972.
Source: U.S. Bureau of Mines.

TABLE 29—ILLINOIS SAND AND GRAVEL SOLD OR USED BY PRODUCER IN
1971-1972, BY CLASS OF OPERATION AND USE

Class of operation and use	1972		1971		Change from 1971-1972 (quantity)	Change from 1971-1972 (value)	Average value per ton	
	Quantity (thousand tons)	Value (in thousands)	Quantity (thousand tons)	Value (in thousands)	(%)	(%)	1971	1972
Construction aggregates								
Sand								
Commercial operations								
Building	6,585	\$ 7,753	7,810	\$ 8,330	-15.68	- 6.93	\$1.07	\$1.17
Paving	7,819	8,998	8,499	10,199	- 8.00	-11.77	1.20	1.15
Fill	<u>2,541</u>	<u>2,312</u>	<u>2,398</u>	<u>1,965</u>	<u>+ 5.96</u>	<u>+17.66</u>	0.82	0.91
Total	16,945	19,063	18,707	20,494	- 9.41	- 6.98		
Government and contractor operations								
Building	†	†	5	5	—	—	1.00	—
Paving	42	44	81	79	-48.15	-44.30	0.97	1.04
Fill	<u>26</u>	<u>2</u>	—	—	—	—	—	0.06
Total	78	\$ 46	86	\$ 84	- 9.30	+45.24		
Gravel								
Commercial operations								
Building	6,632	8,574	7,642	9,081	-13.21	- 5.58	1.19	1.29
Paving	8,590	12,175	13,377	18,229	-35.78	-33.21	1.36	1.41
Fill	1,528	1,504	1,255	1,068	+21.75	+40.82	0.85	0.98
Miscellaneous	312	371	360	364	-13.33	+ 1.92	—	—
Other uses*	<u>352</u>	<u>419</u>	<u>382</u>	<u>433</u>	<u>- 7.85</u>	<u>- 3.23</u>	—	—
Total	17,416	\$23,044	23,016	\$29,175	-24.33	-21.01		
Government and contractor operations								
Building	3	2	16	21	-81.25	-90.48	1.31	0.66
Paving	298	286	408	349	-26.96	-18.05	0.85	0.95
Fill	18	35	27	37	-33.33	- 5.41	1.37	1.94
Other uses	†	†	—	—	—	—	—	—
Total	318	\$ 323	450	\$ 406	-29.33	-20.44		
Industrial sand								
Blast	134	W	95	318	+41.05	W	3.34	W
Molding	1,362	5,668	1,027	4,294	+32.62	+31.99	4.18	4.16
Glass	2,367	7,330	2,334	6,878	+ 0.14	+ 6.57	2.94	3.09
Other uses†	<u>1,310</u>	<u>6,220</u>	<u>1,268</u>	<u>5,291</u>	<u>+ 3.31</u>	<u>+17.56</u>	—	—
Total	5,173	\$19,218	4,728	\$16,781	+ 9.41	+14.52		
Total sand and gravel	39,930	\$61,694	46,983	\$66,940	-15.01	- 7.83	\$1.42	\$1.54

Source: U.S. Bureau of Mines.

* Includes railroad ballast.

† Includes abrasives, chemicals, enamel (1972), engine, filtration, foundry, grinding and polishing (1971), oil (hydrofract) (1972), pottery and other uses.

† Less than ½ unit.

W - Withheld to avoid disclosing individual company confidential data; included with "other uses."

During 1972, 304 limestone, 12 dolomite, and 2 dimension stone quarries were operated in 68 Illinois counties by 124 companies (fig. 8). Production of stone by county and by use is shown in table 32.

Consumption and Uses—Trends in the use of crushed and broken stone in Illinois are shown in figure 9. Of the total stone used in Illinois between 1968 and 1972, about 78 percent has been used as construction aggregate (road base stone, concrete aggregate, surface treatment aggregate, bituminous aggregate, macadam aggregate, and unspecified aggregates). The amount used in

TABLE 30—BUILDING CONSTRUCTION ACTIVITY IN THE UNITED STATES
AND IN ILLINOIS, 1971-1972

Permits issued	United States			Illinois			Illinois percentage of United States 1972 total
	1971 (in millions)	1972 (in millions)	Change from 1971-1972 (%)	1971 (in millions)	1972 (in millions)	Change from 1971-1972 (%)	
Non-residential	\$ 14,134	\$ 15,548	+10.00	\$ 969	\$ 899	- 7.22	5.78
Private and public residential	1,953,155	2,149,688	+10.06	84,091	75,380	-10.36	3.51

Source: Construction Review, January 1973.

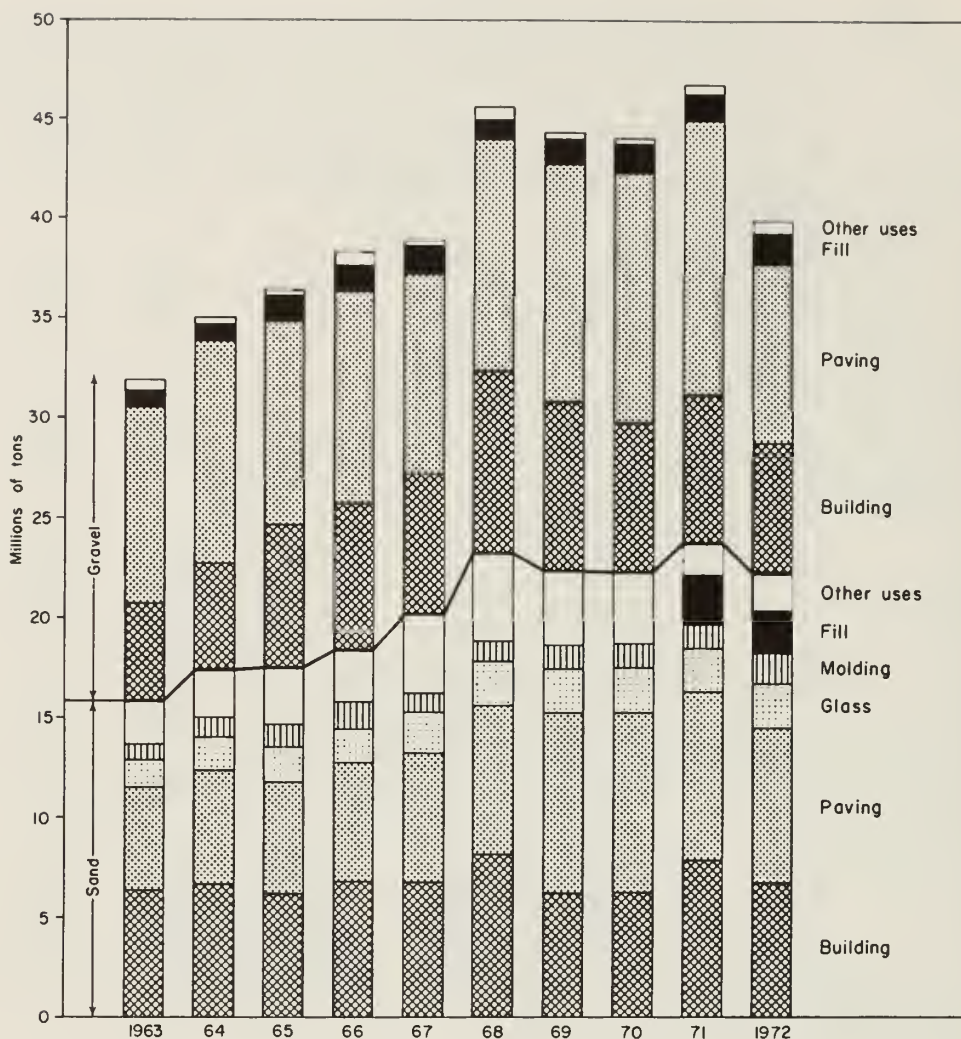


Fig. 7 - Trends in use of sand and gravel produced in Illinois, by type, 1963-1972. From 1963 to 1970, "fill" and "other uses" were undifferentiated for sand consumption. Source: U.S. Bureau of Mines.

Illinois for such purposes in 1972 was 2 percent lower than the 1971 consumption level. In Illinois the production of limestone and dolomite for use as road base stone is growing steadily, but the amount of stone used for bituminous and macadam aggregates is declining (fig. 9).

In Illinois, 7 percent of the total crushed stone was used for agricultural lime in 1972. During the past 5 years the total amount of stone produced for agricultural purposes has declined. The percentage of stone quarried for the manufacture of cement has not changed in the past 3 years, but the total amount has increased from 2.2 million tons in 1970 to 2.5 million tons in 1972, primarily as the result of the increased amount of cement manufactured in Illinois for the past 2 years (fig. 9). The quantity of stone produced for flux and riprap has been steadily declining.

TABLE 31—PRODUCTION OF CRUSHED AND BROKEN STONE IN ILLINOIS, BY USE, 1972

Use	Limestone (tons)	Dolomite (tons)	Total (tons)	Percentage of total stone production	Change from 1971 (%)		Average value per ton	
					United States	Illinois	United States	Illinois
Road base stone	14,797,950	2,395,438	17,193,388	30.56	+ 6.69	+ 0.01	\$1.51	\$1.66
Concrete aggregate	W	W	10,142,065	18.03	+ 3.94	+10.78	1.67	1.70
Surface treatment aggregate	4,816,428	798,699	5,615,127	9.98	+13.83	- 4.36	1.70	1.68
Bituminous aggregate	4,944,506	245,754	5,190,260	9.23	+ 5.06	-29.63	1.81	1.82
Unspecified construction aggregate and road stone	2,548,101	1,477,612	4,025,713	7.16	+26.65	+41.96	1.64	1.66
Agricultural purposes*	3,923,784	100,328	4,024,112	7.15	-15.30	- 2.16	2.15	1.68
Cement	2,505,991	—	2,505,991	4.45	+ 0.53	+12.93	1.17	1.20
Macadam aggregate	W	W	1,496,769	2.66	- 2.25	-53.05	1.62	1.74
Flux stone	W	W	779,155	1.38	+ 2.03	+ 2.77	1.63	1.69
Riprap and jetty stone	W	W	628,954	1.12	+17.60	- 1.25	1.52	1.70
Railroad ballast	W	W	453,533	0.80	+17.82	-39.62	1.50	1.52
Other uses†	15,285,775	2,419,879	4,206,178	7.47				
Total	48,822,535	7,437,710	56,260,245	100.00	+ 6.92	- 1.89	\$1.78	\$1.67

Source: U.S. Bureau of Mines.

* Includes agricultural limestone and poultry grit.

† Includes stone for asphalt filler, chemicals, lime manufacture, mine dusting, filler, roofing aggregate, fill, waste material, whiting, and other uses.

W - Withheld to avoid disclosing individual company confidential data, included with "other uses."

More than 80 percent of the dimension stone (stone quarried and prepared in blocks according to specifications) from Illinois quarries was used as flagstone. The remainder was used for veneer in house construction or as sawed stone. Dimension stone was quarried in Kane and Monroe Counties.

Transportation—More than 90 percent of the stone produced in Illinois was shipped by truck (table 32). Part of the production from 10 of the stone-producing counties—Adams, Cook, Johnson, Kankakee, Monroe, Pulaski, Randolph, St. Clair, Union, and Will—was shipped by rail. Almost 50 percent of the stone quarried in Hardin County was shipped by water. Calhoun was the only other county in the state to ship stone by barge.

Tripoli (Amorphous Silica)

Production—The term "tripoli" includes several fine-grained, porous, siliceous materials that are mined in five of the United States. Tripoli is produced in Arkansas, Missouri, and Oklahoma; amorphous, or soft, silica is mined in Illinois; and rottenstone is produced in Pennsylvania. Illinois has been the largest producer of these siliceous materials in recent years, accounting for more than 60 percent of the total United States production. The recent modernization and expansion of the Illinois Minerals Company plant in Cairo has resulted in a considerable increase in Illinois amorphous silica production (fig. 10).

During 1972, tripoli was produced from underground mines in Alexander County, Illinois, by two companies—Illinois Minerals Company and Tammco,

TABLE 32—PRODUCTION AND VALUE OF CRUSHED AND BROKEN STONE IN ILLINOIS,
BY COUNTY, USE, AND METHOD OF TRANSPORTATION, 1972

County	Number of quarries	Agricultural purposes	Number of operations*										Method of transportation					
			Cement aggregate	Concrete aggregate	Bituminous aggregate	Macadam aggregate	Road base stone	Surface treatment aggregate	Unspecified construction aggregate and road stone	Riprap and jetty stone	Railroad ballast	Flux stone	Others†	Production (tons)	Truck (in tons)	Railroad (in tons)	Water (in tons)	Unspecified lifted (in tons)
Adams	11	5	1				7			1		1	5	W	W	W	—	—
Boone	3	2		1			2	1	1					W	W	—	—	—
Calhoun	4	3				1		3	1	2				W	W	—	W	—
Carroll	11	4	2	1			10	1						493,601	493,601	—	—	—
Champaign	1								1					—	—	—	—	—
Christian	3	1	1	1			1	1	1					694,111	694,111	—	—	—
Clark	6	3		1			3		2					W	W	—	—	—
Clay	2	1					1	1	2					W	W	—	—	—
Clinton	1	1					1	1						W	W	—	—	—
Coles	2	1	1	1			1	1	2		1			488,747	488,747	—	—	—
Cook	33	1	4	7	2		5	5	3	3	2		6	W	W	W	—	—
Cumberland	2								2					W	W	—	—	—
De Kalb	1	1	1		1		1							W	W	—	—	—
Douglas	2	1	1				1	1	2	1				W	W	—	—	—
Du Page	3	1		2	1		1	1	2					W	W	—	—	—
Fayette	2	2			1		1	1						W	W	—	—	W
Ford	1								1					5,717	5,717	—	—	—
Greene	4	3	1	1			3	2	1	1				306,536	306,536	—	—	—
Hancock	5	3	1	1	2		3	2	1			1	2	494,718	494,718	—	—	—
Hardin	7	4	2	3	1	1	4	1	3	3	1			2,351,642	1,145,032	—	1,119,506	87,104
Henderson	4						2	2					1	310,641	310,641	—	—	—
Henry	1	1	1	1			1							W	W	—	—	—
Iroquois	1	1	1				1	1	1	1				18,349	18,349	—	—	—
Jackson	1	1	1				1	1			1			318,141	318,141	—	—	—
Jersey	3	3	3				1	1						107,400	107,400	—	—	—
Jo Davie	19	5		1			1	17	1					279,634	279,634	—	—	—
Johnson	3	2	1				1	2	1	1				W	W	W	—	—
Kane	3	3	2		1		2			1				1,265,479	1,265,479	—	—	—
Kankakee	5	3	4	2	1	1	4	2	4		2		1	W	W	W	—	—
Kendall	1	1	1	1			1	1	1					W	W	—	—	—
Knox	1	1							1					W	W	—	—	—
Lake	1								1					1,182	1,182	—	—	—
La Salle	5	2	1		1		1	2	1	1				W	W	—	—	—
Laurens	1	1	1											W	W	—	—	—
Lee	9	7	1	2	2		5	4	1					1,678,950	1,678,950	—	—	—
Livingston	8	7	3		4	1	4	5	3	2				1,931,407	1,931,407	—	—	—
Logan	2	1					2		2				2	W	W	—	—	—
McDonough	2	2			1		2	1	1					W	W	—	—	—
McHenry	2												2†	W	W	—	—	—
Macon	6								6					79,014	79,014	—	—	—

(Concluded on next page)

TABLE 32--Concluded

County	Number of quarries	Agricultural purposes	Number of operations*										Method of transportation					
			Cement	Concrete aggregate	Bituminous aggregate	Macadam aggregate	Road base stone	Surface treatment aggregate	Unspecified construction aggregate and road stone	Riprap and Jetty stone	Railroad ballast	Flux stone	Others†	Production (tons)	Truck (in tons)	Railroad (in tons)	Unspecified (in tons)	
Macoupin	2				1	1									W	W	—	—
Madison	3	3		2			1		1	1			1		W	W	—	—
Marion	1	1						1		1					W	W	—	—
Massac	1	1		1			1	1	1						W	W	—	—
Menard	3	2					2	2	2						W	W	—	—
Merger	1														W	W	—	—
Monroe	3	1	1	1	1		1	1		1		1	3		W	W	W	—
Montgomery	6	3	2	2		1	4	3	2	1			1		W	W	—	—
Moultrie	1								1						5,000	5,000	—	—
Ogle	15	8	2	3	2		10	4							746,006	746,006	—	—
Peoria	3	2				1	2		2	2	2	1	2		W	W	—	—
Pike	5	4			4		4	3							534,590	534,590	—	—
Pulaski	2	1		1	1		1	2	1	1	1				W	W	—	—
Randolph	4	3		2	1		2	1	2	1					1,456,317	728,817	727,500	—
Rock Island	10	3	3	5	3		3	2	1						W	W	—	—
St. Clair	6	5		4	2		4	2	2	2	1		1†		2,435,941	2,340,477	95,464	—
Sangamon	1														W	W	—	—
Schuyler	2		1				1								W	W	—	—
Scott	2	2		2			2	2	2	2	1				W	W	—	—
Shelby	1							1							W	W	—	—
Stephenson	13	5					10	2							307,635	298,885	—	8,750
Union	6	2		1	1	1	1	1	3	2					W	W	W	—
Vermilion	2	1		1			1	1	1						W	W	—	—
Warren	2	2					2			1	1				W	W	—	—
Washington	2	2				1	2	1	1	1					W	W	—	—
Whiteside	6			1			5		1				3		W	W	—	—
Will	11	3	1	4	5	3	5	3	2	1	2				3,783,350	3,624,099	159,251	—
Winnebago	21	3		2	1		14	2	4				1		1,313,793	1,313,793	—	—
W															34,850,144	32,410,591	2,359,342	W
Total quarries	317	139	37	105	98	19	184	121	119	39	14	8	—		51,623,117	3,341,557	1,119,717	175,854
Total production		4,024,112	2,595,991	10,142,065	5,190,260	1,496,769	17,193,388	5,615,127	4,025,713	628,549	453,533	779,155	4,205,178		56,260,245			
Value		\$6,789,869	\$3,001,241	\$17,284,133	\$9,427,340	\$2,605,179	\$28,583,824	\$9,425,900	\$6,604,242	\$1,069,496	\$690,543	\$1,315,440	\$7,367,808		\$94,225,015			
Average value per ton		\$1.68	\$1.20	\$1.70	\$1.82	\$1.74	\$1.66	\$1.68	\$1.66	\$1.70	\$1.52	\$1.69	—		\$1.67			

Source: U.S. Bureau of Mines

* Companies and/or divisions producing crushed and broken stone.

† Includes stone for lime manufacture, chemical sinter, mine dusting, asphalt filler, whitening, filler, roofing aggregate, fill, waste material, and other uses.

‡ Use not specified.

W - Withheld to avoid disclosing individual company data.

1972 production (tons)

- 5,000,000 or more
- 2,000,000 - 4,999,000
- 1,000,000 - 1,999,000
- 500,000 - 999,000
- 100,000 - 499,000
- Less than 99,000

8 Number of producers

0 20 40 Miles
0 40 Kilometers

Fig. 8 - Illinois stone production, by county, 1972.
Source: U.S. Bureau of Mines.

filler. In the United States during the past 5 years, the percentage of tripoli used as filler has increased from 18 percent in 1967 to 35 percent in 1972.

The tripoli processed in Illinois was used for abrasives, for fillers, and a small amount for refractory purposes. Between 1971 and 1972, the finished material sold for abrasives declined from 50.6 to 48.6 percent, while that sold for filler increased from 45.9 to 47.9 percent.

Metals

Lead, Zinc, and Silver

Production—The metals mined in Illinois include lead, zinc, and silver. During 1972, these metals were recovered from fluorspar ore mined in Pope and Hardin Counties by Minerva Oil Company and Ozark-Mahoning Company and from zinc-lead ore mined in Jo Daviess County by Eagle-Picher Industries, Inc., which operated the Bautsch and Gray mines. Operations at the Gray mine were shut down in September 1972.

In 1972, 346,000 tons of fluorspar ore and 211,000 tons of zinc ore were treated to recover 11,378 tons of zinc, 1,335 tons of lead, and a small amount of silver (table 33). The production of lead, in terms of recoverable metal, increased 7.8 percent and zinc production decreased 17.0 percent from the 1971 production level. The value of lead increased 17.3 percent, but the value of zinc declined 1.3 percent.

No silver production was reported for Illinois for the years 1957 through 1970, but because of the recent price increase in silver, it was again recovered from ores in 1971. The amount and value of silver recovered from these ores in 1972 were almost double the 1971 level. In spite of the increase, the total amount of silver produced in Illinois remained very small. Individual company data for silver production is confidential and cannot be published.

Other Minerals

Peat

Other minerals mined in Illinois include peat, gemstones, and germanium. Although peat is classified as a fuel by the U.S. Bureau of Mines, it

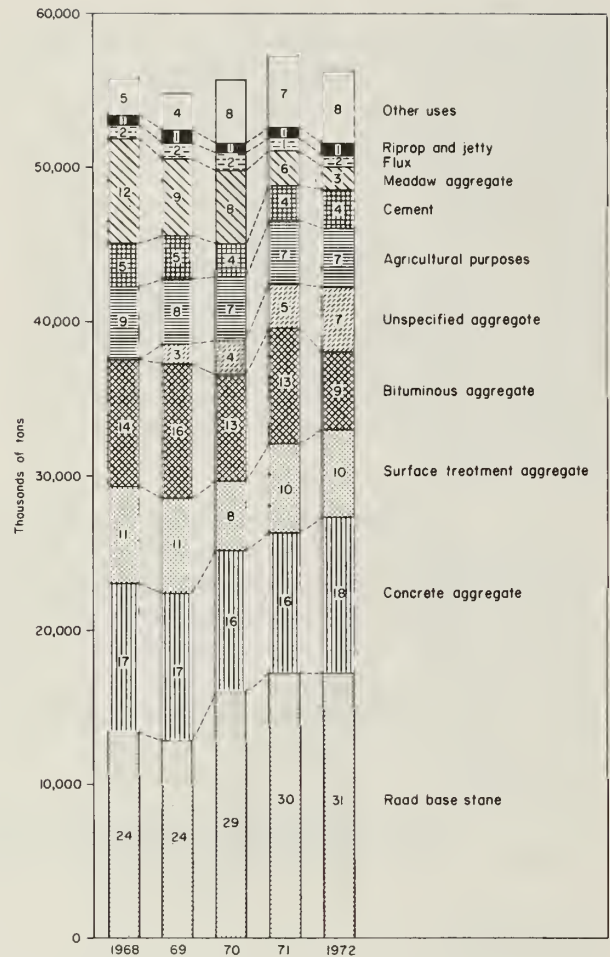


Fig. 9 - Percentage of crushed and broken limestone and dolomite sold in Illinois, by use, 1968-1972. Source: U.S. Bureau of Mines.

has never been used to any great extent for such purpose in this country. In the United States, over 85 percent of the commercial sales (excluding imports) of peat is used for soil improvement purposes, including 6 percent in potting soils, 5 percent in packing for plants, and the rest for use in mushroom beds, in earthworm culture, in mixed fertilizers, and as a carrier for seed inoculant. About one-third of the peat consumed in the United States is imported; Canada supplies about 96 percent of the imports.

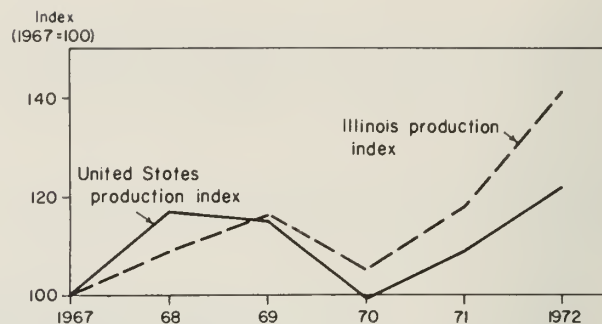


Fig. 10 - Index of production of processed tripoli sold or used by producers in the United States and in Illinois, 1967-1972. Source: U.S. Bureau of Mines.

Production of peat in the United States declined by 5 percent in 1972, from 605,382 tons in 1971 to 576,712 tons in 1972. Illinois ranked second, after Michigan, among the 22 peat-producing states. Illinois producers sold 74,003 tons of peat, of which 69,523 tons were produced during the year. Illinois production declined by 4.5 percent during 1972, while sales quantity increased by 3.0 percent (table 34). The three major kinds of peat—reed-sedge, moss, and peat humus—were produced in Illinois.

Gemstones

The gemstones produced in Illinois are mainly fluorspar. They contribute very little to the total mineral production value.

Germanium

Germanium is a by-product of the Illinois fluorspar-zinc-lead industry. It is recovered by Eagle-Picher Industries, Incorporated, at its plant at Quapaw, Oklahoma.

TABLE 33—PRODUCTION AND VALUE OF LEAD, ZINC, AND SILVER IN ILLINOIS, 1970-1972

	1972	1971	1970
Mines producing, lode*	2	4	6
Material sold or treated	(thousand tons)		
Fluorspar ore	346,000	320,000	348,000
Zinc ore	211,000	230,000	266,000
Production, recoverable metal	(tons)		
Zinc	11,378,000	12,706,000	16,797,000
Lead	1,335,000	1,238,000	1,532,000
	(in ounces)		
Silver	W	W	0
Value	(in thousands)		
Zinc	\$4,039,000	\$4,091,000	\$5,146,000
Lead	401,000	342,000	479,000
	(in dollars)		
Silver	W	W	0

Source: U.S. Bureau of Mines.

* Fluorspar operations producing by-product lead and zinc not included in mine count.

W - Withheld to avoid disclosing individual company confidential data.

MINERAL MATERIALS PROCESSED

Mineral materials produced in other states but processed in Illinois in 1972 included expanded perlite, iron oxide pigments, elemental sulfur, ground barite, exfoliated vermiculite, ground mica, calcined gypsum, bismuth, rare earths, columbite, secondary slab zinc, pig iron, and natural gas liquids.

Expanded perlite—Expanded perlite was processed from crude perlite mined outside the state by Silbrico Corporation, Cook County; Mica Pel-

TABLE 34—PRODUCTION AND COMMERCIAL
SALES OF PEAT IN ILLINOIS,
1968-1972

Year	Number of plants	Production (tons)	Commercial sales			Illinois Production (%)*
			Quantity (tons)	Value	Average value per ton	
1968	7	61,520	61,520	\$867,000	\$14.10	9.94
1969	8	67,330	67,330	958,000	14.22	11.77
1970	6	62,990	63,341	711,000	11.23	12.19
1971	7	72,523	71,823	W	W	12.03
1972	5	69,523	74,003	W	W	12.06

Source: U.S. Bureau of Mines.

* Illinois production as percentage of United States production.

W - Withheld to avoid disclosing individual company data.

let, Incorporated, De Kalb County; Filter Products Corporation, and National Gypsum Company, Lake County; and Johns-Manville Perlite Corporation, Will County. Expanded perlite is used as concrete and plaster aggregate, horticultural aggregate, in roof insulating board, for low-temperature insulation, as a filter aid, and for miscellaneous purposes. The quantity and value of expanded perlite produced in 1972 showed a 16 percent and a 19 percent increase, respectively, over the 1971 levels.

Iron Oxide Pigments—Iron oxide pigments processed in Illinois in 1972 showed an 89 percent increase in quantity and a 51 percent increase in value over 1971 levels. The finished pigments were produced from iron ore imported from other states by the Prince Manufacturing Company, Incorporated, Quincy; G. B. Smith Chemical Works, Incorporated, Maple Park; and Charles Pfizer and Company, Incorporated, East St. Louis.

Elemental Sulfur—During 1972, elemental sulfur was recovered by three companies: the Anlin Company of Illinois at its plant in Madison County, Union Oil Company of California at the Union 76 Division plant in Cook County, and Marathon Oil Company at its Robinson refinery in Crawford County. The amount of sulfur recovered in 1972 was 17 percent more than that recovered in 1971 and over 128 percent more than the amount recovered in 1970.

The Anlin Company of Illinois processed gas streams to recover sulfur from the Wood River refineries of Shell Oil Company and Amoco Oil Company and from the Hartford refinery of Clark Oil and Refining Corporation. During the year, the Illinois Environmental Protection Agency issued a permit to the Anlin Company to double the capacity of its sulfur recovery facilities at the Wood River plant.

Ground Barite—Ground barite was processed in St. Clair County in 1972 by Charles Pfizer and Company, Incorporated. Its 1972 value was 5 percent higher than that in 1971, but the level of production remained the same. The ground barite was used as a filler or extender in paint manufacture.

Exfoliated Vermiculite—Exfoliated vermiculite, made from crude vermiculite mined outside the state, was processed in Franklin Park, Cook County, by Construction Products Division of W. R. Grace and Company; in De Kalb, De Kalb County, by Mica Pellets, Incorporated; and in Girard, Macoupin County, by the International Vermiculite Company. More than 44 percent of the total amount of exfoliated vermiculite processed was used for loose-fill insulation. The 1972 consumption of vermiculite for concrete aggregates and horticultural uses was 20 percent and 18 percent of the total amount, respectively. Block insulation, plaster aggregate, and unspecified uses accounted for the other 18 percent of the total amount. The quantity of exfoliated vermiculite processed was 15 percent higher than in 1971, but the value of processed material sold was about 1 percent lower.

Ground Mica—Ground mica was processed in Forest Park, Cook County, by the U.S. Mica Company, Incorporated. More than 60 percent of the ground mica produced in 1972 was used for wall board joint cement and roofing material, while the rest was used in paint, well drilling fluid, plastics, welding rods, cable and wire insulation, and for miscellaneous uses. About 3 percent more ground mica was produced in 1972 than in 1971, and its value was about 2 percent higher than the 1971 value.

Calcined Gypsum—Gypsum, which is imported from out-of-state mines, is calcined in Waukegan, Lake County, by the National Gypsum Company. In 1972 the quantity and value of gypsum calcined exceeded by 15 percent and 20 percent, respectively, the levels of 1971.

Bismuth—A small amount of metallic bismuth, about 1 percent of the 1972 domestic production, was recovered in Illinois from scrap and recycled material by United Refining and Smelting Company in Franklin Park, Cook County.

Rare Earths—Rare earths were processed from imported monazite, stocks of thorite, and from various other sources by Lindsay Rare Earths Division of Kerr-McGee Chemical Corporation in West Chicago, Du Page County.

Columbite—Columbium concentrate from domestic and foreign sources was processed by Arnold Engineering Company in Marengo, McHenry County, to obtain columbite, which is used as a ferroalloy in the steel industry.

Slab Zinc—During 1972, secondary slab zinc was produced by Apex Smelting Company in Chicago and Sandoval Zinc Company in Sandoval, Marion County. The primary slab zinc plant at Sauget, St. Clair County, was sold by American Smelting and Refining Company to AMAX in 1972. Plant remodeling and renovation was begun in anticipation of resuming zinc production. The capacity could eventually reach 120,000 to 130,000 tons of slab zinc per year. The new plant is expected to cost 20 million dollars and to replace the present horizontal re-tort plant at Blackwell, Oklahoma.

Pig Iron and Steel—During 1972, 7.2 million tons of pig iron, valued at 542.9 million dollars, was produced in blast furnaces in Illinois. Four out of the five operations are located in Cook County—Interlake Steel Company, International Harvester Company's Wisconsin Steel Division, U.S. Steel Corporation, and Republic Steel Corporation. The fifth plant, Granite City Steel Company, is in Madison County. According to the American Iron and Steel Institute, 12.1 million tons of raw steel was produced in Illinois in 1972, an increase of 11.0 percent over the 1971 level.

Natural Gas Liquids—Natural gas liquids were processed at the Tuscola plant, Douglas County, operated by the U.S. Industrial Chemical Company, a Division of National Distillers and Chemical Corporation. The plant processed 550 million cubic feet of gas per day and produced 8.6 million barrels of natural gas liquids during 1972. In 1971, 560 million cubic feet of gas per day were processed to produce 8.8 million barrels of natural gas liquids. Natural gas liquids include ethane, propane, isobutane, unsplit butane, and a combination of gasoline and liquefied petroleum gas (LPG).

TABLE 35—PRODUCTION AND VALUE OF CEMENT MANUFACTURED IN ILLINOIS, 1971-1972

	Portland cement			Masonry cement		
	1971	1972	Change from 1971-1972 (%)	1971	1972	Change from 1971-1972 (%)
Number of active plants	3	3		3	3	
Production (tons)	1,512,712	1,540,281	+ 1.8	71,074	76,004	+ 6.9
Shipments from mills						
Quantity (tons)	1,424,718	1,571,188	+10.2	73,047	79,661	+ 9.0
Value	\$25,974,803	\$33,124,461	+27.5	\$2,335,759	\$2,483,457	+ 6.3
Average value per ton	\$18.23	\$21.08		\$31.98	\$31.18	- 2.5
Stocks at mills, Dec. 31	126,525	180,135	+42.3	12,503	9,173	-26.6

Source: U.S. Bureau of Mines.

MINERAL PRODUCTS MANUFACTURED

The mineral products manufactured in 1972 from crude mineral materials mined in Illinois and/or elsewhere included cement, clay products, coke, lime, and glass. Available statistical data on production, consumption, capacity, and uses are given below.

Cement

Production—In Illinois 1,540,281 tons of finished portland cement and 76,004 tons of prepared masonry cement were manufactured in 1972, a 1.8 percent increase in portland cement and a 6.9 percent increase in masonry cement over the 1971 production levels. The value of portland cement increased 27.5 percent and that of masonry cement 6.3 percent during the year. Cement was produced by three companies—Marquette Cement Manufacturing Company at Oglesby, La Salle County; Medusa Cement Company at Dixon, Lee County; and the Missouri Portland Cement Company at Joppa, Massac County.

Finished portland cement shipments totaled 1,571,188 tons and were valued at 33 million dollars, a 10.3 percent increase in quantity and a 27.5 percent increase in value over 1971 levels. Masonry cement shipments totaled 79,661 tons and were valued at 2.5 million dollars, a 9.1 percent increase in quantity and a 6.3 percent increase in value over 1971 levels (table 35). Production and shipments of finished portland cement are shown by use in figure 11.

The raw material used in the manufacture of portland cement included limestone, sandstone, shale, clays, sand, slag, and gypsum. Of the total 2,505,991 tons of crushed limestone produced in Illinois for use in cement manufacture in 1972, 85 percent was consumed in the state and 15 percent was exported to other states.

Bulk shipments of cement from Illinois plants to customers were made by truck, rail, and barge. Of the 1,465,341 tons shipped in bulk, 96 percent was transported by truck. Container shipments totaled 105,847 tons, with 99,732 tons shipped by truck and 6,115 tons shipped by rail.

Capacity—The capacity of the three Illinois plants for finished portland cement totaled 1,880,000 tons in 1972. Total capacity is expected to increase with the reopening of a plant at La Salle and installation of a new kiln at Oglesby.

In July 1972 the Centex Corporation acquired the old Alpha Portland Cement Company plant at La Salle and an adjacent 1,200-acre deposit of stone. The Alpha plant had been shut down since 1970. New equipment is being installed that will increase capacity to 376,000 tons per year. The installation is expected to be completed by early 1974. Marquette Cement Manufacturing Company has replaced eight small kilns with one large kiln at its Oglesby plant, and this will increase its capacity by 28,000 tons to a total of 771,000 tons per year.

Consumption—A total of 3,603,330 tons of portland cement was consumed in Illinois in 1972, 310,078 tons less than the amount consumed during 1972 (fig. 12). The decline indicates the slow rate of new construction in the state. Plants in Illinois produced the equivalent of only 42.7 percent of the portland cement consumed in Illinois, necessitating importation of the rest from other states.

Illinois consumption of masonry cement in 1972 reached a record high for the decade, 115,894 tons, an increase of 9 percent over 1971 and 2.8 percent above the previous record consumption set in 1969 (fig. 13). Shipments of masonry cement from Illinois plants increased by 9.1 percent during 1972, but they accounted for only 69 percent of the total Illinois consumption of masonry cement. The amount of masonry cement imported into the state has been steadily increasing for the past 5 years.

Coke

Production—In 1972, a total of 2,085,000 tons of coke was produced and 186,000 tons of coke breeze was recovered from four oven-coke operations in Illinois, which is almost equal to the 2,144,000 tons of coke and 189,000 tons of breeze produced in 1971 (table 36). At the average value of \$39.72 per ton for all uses, the U.S. Bureau of Mines estimated that the total production was valued at 82.8 million dollars, 3 percent higher than the production

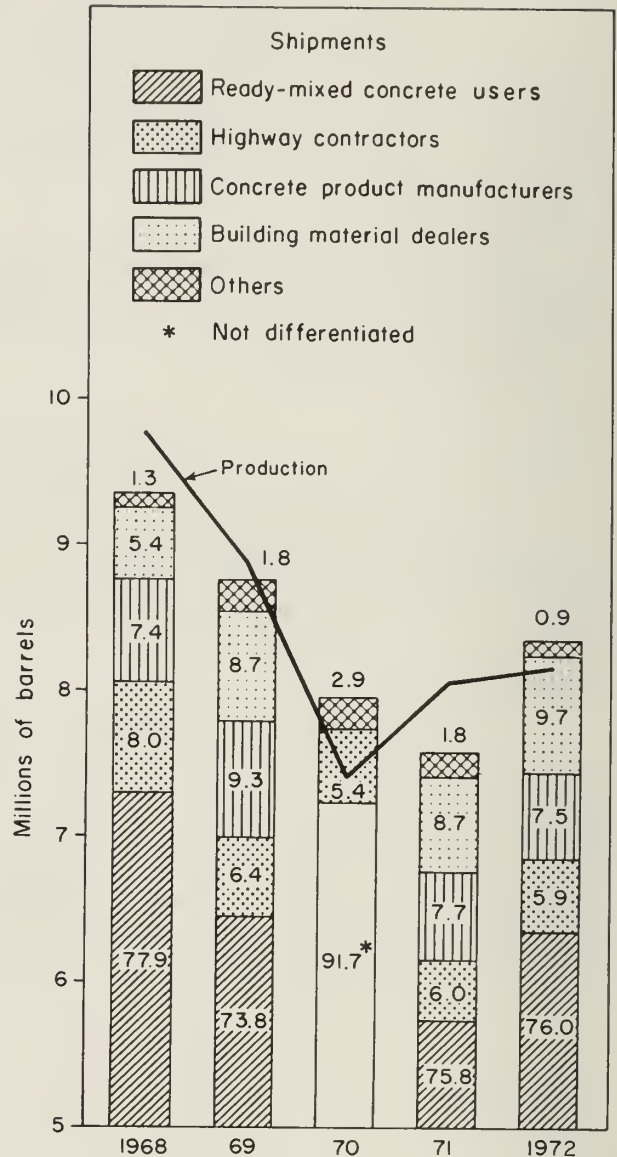


Fig. 11 - Percentage of production and shipments of finished portland cement in Illinois, by customer type, 1968-1972. Four plants were active in 1968-1970 and three in 1971, 1972. (5.32 barrels = 1 ton.)

value in 1971. Of the coke produced in 1972, 98 percent was used in blast furnaces by the producing companies and the remainder was sold on the open market.

The coal used for the manufacture of coke in Illinois in 1972 came from five other states—Kentucky, West Virginia, Arkansas, Pennsylvania, and Virginia—as well as from Illinois. Illinois contributed 38 percent and Kentucky 35 percent of the coal in 1972 (table 37). In 1971 the Illinois percentage was 44 percent, and, indeed, the amount of Illinois coal used for coking in Illinois has declined for the past 4 years. Meanwhile, the use of Pennsylvania coal has increased, and coal for coking was shipped from Arkansas to Illinois for the first time in 1972.

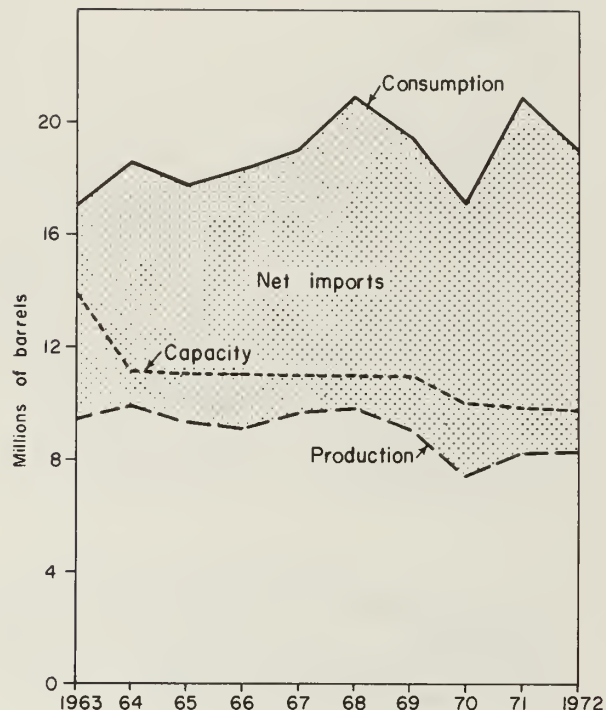


Fig. 12 - Production and consumption of finished portland cement in Illinois, 1963-1972. (5.32 barrels - 1 ton.)

Illinois sold 3,697,000 tons of coal for coking purposes in 1972, of which Franklin County supplied 1,321,000 tons, Jefferson County 2,251,000 tons, and Saline County 125,000 tons. Only 34 percent of the coal was used in Illinois; the remainder was shipped to the northwestern area of Indiana.

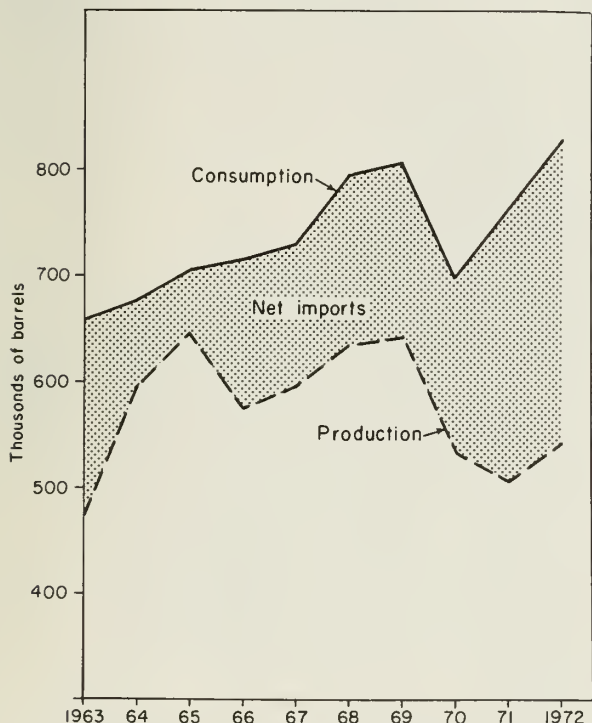


Fig. 13 - Production and consumption of prepared masonry cement in Illinois, 1963-1972. (7.19 barrels = 1 ton.)

Consumption—Illinois consumed 3,201,000 tons of coke and 278,000 tons of coke breeze in 1972 (table 37), a 9 percent and a 24 percent decline, respectively, from the 1971 consumption levels. The consumption of coke in Illinois blast furnaces has declined for the last 3 years, decreasing from 3,705,000 tons in 1970 to 2,993,000 tons in 1972. In 1972, blast furnace use constituted 94 percent of the total demand for coke in Illinois, a drop of 1 percent from 1970. Some coke was used for residential heating, some for foundry use, and some for other industrial plant uses.

Coke breeze was used for fuel in steam plants, in agglomerating plants, and for other industrial uses.

Lime

TABLE 36—PRODUCTION AND CONSUMPTION
OF COKE IN ILLINOIS, BY USE,
1968-1972
(thousand tons)

Production—In 1972, Illinois ranked sixth in the nation in lime production. Hydrated and quick lime were produced by two companies—Marblehead Lime Company, which has four plants in Adams and Cook Counties, and the Vulcan Materials Company, which has one plant in Cook County. The total amount produced in 1972 was 5 percent higher than the 1971 level but 4 percent lower than the 1969 production record (fig. 14). The lime was shipped to consumers in both Illinois and adjoining states.

Year	Production		Total coke consumption*	Blast furnaces	Use			Total breeze consumption
	Coke	Breeze			Foundry	Other industrial plants	Residential heating	
1972	2085	186	3201	2993	189	16	4	278
1971	2144	189	3505	3298	178	26	3	367
1970	2356	206	3917	3705	183	27	3	461
1969	2341	199	2872	2621	219	27	4	252
1968	2074	157	2831	2210	232	285	4	277

Source: U.S. Bureau of Mines.

* Data may not add to totals shown because of independent rounding.

Consumption and Uses—A total of 1,023,000 tons of lime was consumed in Illinois, 5.4 percent more than in 1971 (fig. 15). The lime was used in steel furnaces, in refractories, for water purification, for sewage treatment, and for other purposes. In spite of being a major lime producer, Illinois continued to be a net importing state.

TABLE 37—COKE AND BY-PRODUCTS PRODUCED, SOLD, OR USED
BY PRODUCER IN ILLINOIS, 1970-1972

Coke and by-products	Unit	1972			1971			1970		
		Quantity	Value at plant		Quantity	Value at plant		Quantity	Value at plant	
			Total (in thousands)	Average (per ton)		Total (in thousands)	Average (per ton)		Total (in thousands)	Average (per ton)
Plants in operation		4			4			5		
Coal carbonized	thousand tons	3,312	\$49,474	\$14.94	3,371	\$45,207	\$13.41	3,666	\$40,895	\$11.16
Coal per ton of coke	tons	1.59		23.75	1.57		21.05	1.56		17.41
Coke produced	thousand tons	2,085	82,816	39.72	2,144	80,207	37.41	2,356	70,609	29.97
Coke yield, percent of coal carbonized		62.95%			63.60%			64.27%		
Source of coal carbonized										
Illinois	thousand tons	1,242			1,463			1,644		
Kentucky	thousand tons	1,138			1,137			1,162		
West Virginia	thousand tons	716			705			819		
Pennsylvania	thousand tons	63			22			16		
Virginia	thousand tons	7			20			39		
Arkansas	thousand tons	105			—			—		
Indiana	thousand tons	—			—			8		
Total	thousand tons	3,271			3,320			3,688		
From stock	thousand tons	41								
Coke sold or used by producer	thousand tons									
Blast furnaces	thousand tons	2,042	67,068		2,193	73,337		2,299	52,251	22.73
Other purposes	thousand tons	W	W		W	W		41	2,159	52.66
Commercial sales	thousand tons									
Blast furnaces	thousand tons	W	W		W	W		W	W	
Other industrial plants	thousand tons	—	—		W	W		8	158	19.75
Residential	thousand tons	—	—		W	22		1	21	21.00
Coke oven by-products										
Ammonia produced (sulfate equivalent)	thousand tons	22			26			28		
Per ton of coal coked	lb	13.28			15.27			15.39		
Sulfate equivalent sold	thousand tons	20	303		34	394		25	643	
Coke oven gas produced	million cu ft	33,524			33,285			36,470		
Per ton of coal	thousand cu ft	10.12			9.87			9.95		
Used in heating coke ovens	million cu ft	13,948			14,411			13,882		
Surplus used or sold	million cu ft	16,908	4,178	0.247 \$/Mcft	14,870	3,351	0.225 \$/Mcft	20,165	9,249	0.504 \$/Mcft
Wasted	million cu ft	2,668			4,004			2,423		
Light oil and derivatives										
Sold	thousand gal	W	W	W	W	W	W	W	W	W
Tar produced	thousand gal	22,152			22,715			25,284		
Per ton of coal coked	gal	6.69			6.74			6.89		
Used by producers	thousand gal	W			W			W		
Sold for refining	thousand gal	21,204	2,318	0.109 \$/gal	22,532	2,311	0.103 \$/gal	25,491	2,191	0.086 \$/gal
Total coke and by-products sold or used			89,615			86,263			82,694	

Source: U.S. Bureau of Mines.

W - Withheld to avoid disclosure of individual company confidential data; included in total value.

Clay Products

In 1972, clay products valued at 69.2 million dollars were produced in Illinois, an increase in value of about 16 percent over 1971 figures (table 38). Included in this value are whiteware and pottery (31.7 million dollars), structural clay products (16.9 million dollars), refractories (15.8 million dollars), and lightweight aggregate and other products (4.9 million dollars). The value of clay refractories produced in Illinois increased 8.7 percent in 1972. The value of structural products, which includes common brick, face brick, drain tile, and sewer pipe, declined 2.3 percent during the year. The number of whiteware and pottery producers declined from 9 to 7, but the product value increased 12.7 percent to a record high of 31.7 million dollars.

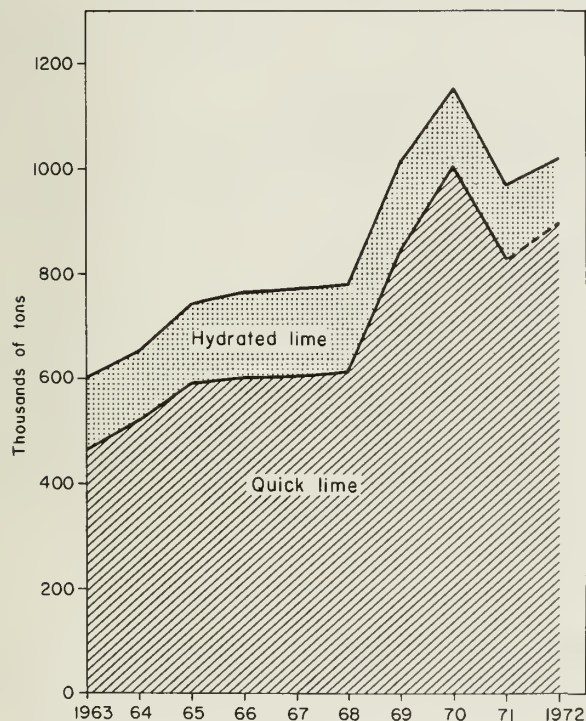


Fig. 15 - Trends in consumption of quick and hydrated lime in Illinois, 1963-1972. Source: U.S. Bureau of Mines.

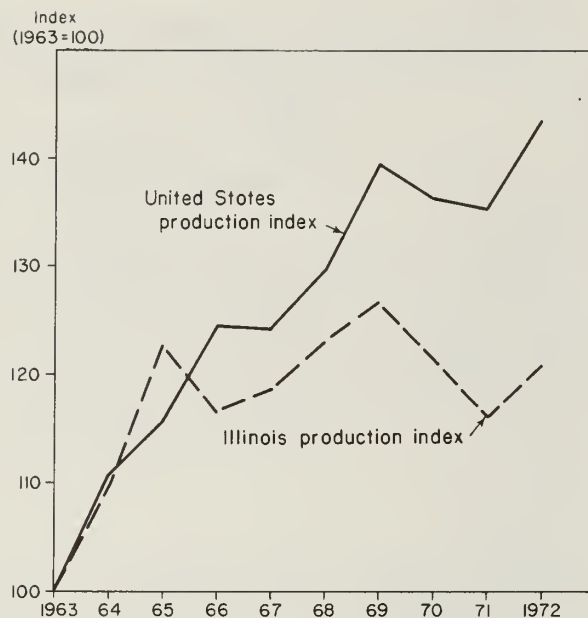


Fig. 14 - Index of lime production in the United States and in Illinois, 1963-1972.

In 1972, 34 companies manufactured clay products in Illinois. Fifteen of these also reported clay mining operations.

To obtain accurate, current information about the Illinois clay products industry, the Illinois State Geological Survey sends questionnaires to all producers in the state each year. The information obtained by the Survey is recorded in table 38.

Glass

Much of the high-purity silica produced in La Salle and Ogle Counties is used in the manufacture of glass. Because silica sand constitutes more than half the raw material used in glass making, 22 glass manufacturing firms were operating in Illinois in 1972, according to the *Glass Factory Directory*. The value and quantity of glass manufactured in Illinois during 1972 was not available at the time this report was prepared.

TABLE 38—VALUE AND TYPE OF CLAY PRODUCTS MANUFACTURED IN ILLINOIS, 1971-1972*

Products	1972			1971		
	Number of producers reporting	Production (in thousands)	Value (in thousands)	Number of producers reporting	Production (in thousands)	Value (in thousands)
Common brick	3	79,312 units	\$ 3,344	4	81,809 units	\$ 3,810
Face brick	7	127,982 units	6,245	8	124,072 units	6,152
Drain tile	5 }	114.7 tons	7,270	4* }	124.6 tons	7,308
Sewer pipe	3 }			3 }		
Lightweight aggregate	2 }	650.0 tons	4,863	3 }	684.3 tons	4,881
Other†	2 }			2 }		
Refractories	7	223.7 tons	15,834‡	6	144.7 tons	9,486
Whiteware and pottery	7	—	31,692	9	—	28,122
Number of companies reporting	34	—		35	—	
Total			\$69,248			\$59,759

Source: Illinois State Geological annual canvass.

* Revised.

† Includes other structural and miscellaneous products.

‡ Includes non-clay refractories; rounded for total.

* One of the drain tile producers thought to be in operation did not respond to the canvass in 1971.

REVIEW OF PRELIMINARY MINERAL PRODUCTION DATA FOR 1973

MINERAL MATERIALS MINED

Preliminary production data on minerals mined and selected mineral products manufactured in Illinois during 1973 indicate, according to the U.S. Bureau of Mines, that the estimated value of mineral materials mined in Illinois during 1973 totaled 725 million dollars, or about 3.4 percent more than the value reported in 1972. The mineral fuels continued to contribute the major part of the value of mineral materials mined, followed by industrial and construction materials and metals (table 39).

Fuels

In spite of the nationwide increase in the demand for coal in 1973, coal production in Illinois declined 6.4 percent. However, the increase in average value per ton from \$6.14 in 1972 to \$6.70 in 1973, increased the total value of coal mined in the state from 403 million dollars to 410 million dollars. Of the 61.3 million tons mined in Illinois in 1973, 32.6 million tons, or 53.2 percent, came from underground mines and 28.7 million tons, or 46.8 percent, from strip mines (fig. 1).

The production of crude petroleum in 1973 declined further to a recent new low of 30.1 million barrels, 13.5 percent lower than the 1972 production. Natural gas production increased by 37.2 percent; the unit value remained unchanged during 1973.

Industrial and Construction Materials

With the expansion of construction activity on both national and state levels, the demand for construction materials improved significantly in 1973. Among the mineral commodities mined in Illinois for construction purposes in 1973, stone ranked first in value, followed by sand and gravel. The combined output of sand and gravel and stone accounted for 22.7 percent of the total value of the mineral materials mined in the state. Nationally, Illinois ranked second in the output of stone and fourth in sand and gravel production.

Clays

Clays, which are used to manufacture refractories and construction materials, such as brick, lightweight aggregate, vitrified clay pipe, and clay floor and wall tile, showed a 15.5 percent increase in quantity and value over 1972 levels.

TABLE 39—PRELIMINARY MINERAL PRODUCTION DATA FOR 1973

Commodity	Unit	1973		1972		Change from 1972-1973	
		Quantity	Value	Quantity	Value	Quantity	(%)
			(in thousands)		(in thousands)		Value
MINERAL MATERIALS MINED							
Fuels							
Coal	thousand tons	61,314	\$410,803	65,523	\$402,481	- 6.42	+ 2.06
Crude oil	thousand bbl	30,174	118,580	34,874	121,013	-13.47	- 2.01
Natural gas	thousand MMcf	W	W	1,194	334	W	W
Natural gas liquids*	thousand bbl	—	—	168	566	-13.09	-13.07
Industrial and construction materials							
Stone†	thousand tons	64,452	110,674	56,260	94,225	+14.56	+17.46
Sand and gravel	thousand tons	40,328	62,911	39,929	61,696	+ 0.99	+ 1.97
Clays‡	thousand tons	1,982	3,808	1,716	3,314	+15.50	+14.90
Fluorspar	thousand tons	144,903	10,976	132,405	9,961	+ 9.44	+10.19
Tripoli	thousand tons	W	W	W	W		
Metals							
Lead	tons	500	163	1,335	401	-62.55	-59.35
Zinc	tons	5,310	2,130	11,378	4,039	-53.33	-47.26
Silver	lb	W	W	W	W		
Others							
Peat	thousand tons	73	889	74	935	- 1.35	- 4.92
Gem stones		N.A.	2	N.A.	2	0.00	0.00
Germanium		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Values that cannot be disclosed (W)							
		—	3,748	—	3,393		
Total value of mineral materials mined							
		—	\$725,141	—	\$701,242	—	+ 3.40

Source: U.S. Bureau of Mines.

* Estimated.

† Excludes dimension stone; included with value of items indicated by symbol W.

‡ Excludes fuller's earth; included with value of items indicated by symbol W.

W - Withheld to avoid disclosing individual company data.

N.A. - Not available.

Fluorspar

In 1973, the estimated fluorspar shipments from United States mines declined 4 percent from 1972 shipments; finished fluorspar shipments from Illinois mines increased 9.4 percent to 144,903 tons during the same period.

Metals

With the closing of the Bautsch Mine, owned by Eagle-Picher Industries, Incorporated, near Galena, Jo Daviess County, the production of lead and zinc in Illinois fell markedly in 1973. In terms of recoverable metal, lead production decreased 62.5 percent and zinc output dropped 53.3 percent from the 1972 production levels. Almost all the lead, zinc, and silver produced in Illinois in 1973 were recovered as by-products of fluorspar operations in southern Illinois.

Other Minerals

During 1973, Illinois produced 73,000 tons of peat valued at \$889,000. Illinois gemstones sold in the same year were valued at \$2,000.

MINERAL PRODUCTS MANUFACTURED

Preliminary production data on mineral products manufactured in Illinois from mineral materials mined in Illinois and elsewhere are available only for cement, lime, and coke at this time. Based on the information available, the quantity of cement produced in Illinois during 1973 totaled 1.7 million tons, an increase of 3.4 percent since 1972. Included in this increase were 1.62 million tons of portland cement, valued at 36.8 million dollars, and 88,000 tons of masonry cement, valued at 2.9 million dollars.

The amount of lime sold or used by producers in Illinois in 1973 was 15 percent greater than in 1972.

The production of coke in Illinois further declined during 1973 to 1.9 million tons, or 6.3 percent less than 1972 coke production.

SELECTED LIST OF SURVEY PUBLICATIONS

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5. Summary of Illinois Mineral Production in 1961. 1962.
11. Shipments of Illinois Crushed Stone, 1954-1964. 1966.
12. Mineral Resources and Mineral Industries of the East St. Louis Region, Illinois. 1966.
13. Mineral Resources and Mineral Industries of the Extreme Southern Illinois Region. 1966.
17. Mineral Resources and Mineral Industries of the Springfield Region, Illinois. 1967.
19. Mineral Resources and Mineral Industries of the Western Illinois Region. 1967.
20. Mineral Resources and Mineral Industries of the Northwestern Illinois Region. 1967.
22. Mineral Resources and Mineral Industries of the Northeastern Illinois Region. 1968.
26. Evaluation of Fuels—Long-Term Factors and Considerations. 1969.
27. Illinois Mineral Production by Counties, 1968. 1970.
29. Directory of Illinois Mineral Producers. 1971.

INDUSTRIAL MINERALS NOTES SERIES

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